Aspectual differences between agentive and non-agentive uses of causative predicates[*]

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Abstract This paper aims to provide an account for why, across languages, the zero-change (or failed-attempt) use of causative predicates is easier to obtain with agent subjects than with causer subjects, elaborating on the analysis developed in Martin (2015) and solving some of its shortcomings. The paper is structured as follows. Section 2 reports experimental studies suggesting that the degree of acceptance of the zero-change use of causative predicates at study varies across languages, focusing on Mandarin on one hand, and French and English on the other. This difference is accounted for in section 7. Section 3 identifies the source of the zero-change uses for these two sets of languages. Section 5 shows how the Voice head introducing agents vs. causers combines with causative vps, and how the semantic difference between these two voice heads influences the interpretation of the vp-event, and, in particular, the way the causing event type denoted by the vp is tokenized (i.e., mapped to event tokens in the model). It is then argued that the semantic difference between the two heads ultimately explains why typically, zero-change uses of causative vps are acceptable with agents only, starting with standard lexical causative verbs in section 6.1, and then addressing defeasible causative verbs in section 6.2. Section 8 accounts for why the zero-change reading is occasionally accepted by some speakers even with a causer subject.

Keywords: telicity, perfectivity, non-culminating accomplishments, agentivity, causation, defeasible causatives, sublexical modality, agents, causers, Voice, Mandarin, French

1 Introduction

A standard assumption in the literature on argument structure is that external arguments are not arguments of their verbs (Kratzer 1996).[1] A not uncommon conclusion from this assumption is that the alternation between agent (animate) and causer (inanimate) external arguments of causative predicates is irrelevant for the aspectual properties of the VP, for they lie outside the event structure relevant for the calculation of these properties.

This conclusion has been challenged in recent work establishing that the aspectual properties of some lexical causative predicates very much vary with the thematic properties of the subject. The generalization observed across languages is that with a subset of causative verbs (whose extension and properties partly vary across languages), a change of the theme's referent is implied, but crucially not entailed, by lexical causative statements, *if* the subject is associated with some agentive properties. By contrast, a causative sentence built with a verb of the same set tends to entail, or at least much more strongly implies, that at least a part of a change developing towards a result state of the type encoded by the predicate (henceforth *P*-state) occurs when the subject is a (non-instrumental) inanimate entity or an accidental agent.[2] This is what Demirdache & Martin (2015) call the Agent Control Hypothesis, which says that so-called failed-attempt or zero-change uses of causative predicates require the predicate's external argument to be associated with 'agenthood' properties. Many (genetically unrelated) languages confirm this correlation; see Jacobs 2011 on Salish languages, Demirdache & Martin 2015, Liu 2018 and van Hout et al. 2017 on Mandarin, Park 1993 and Lee 2015 and Beavers & Lee forthcoming on Korean, Kratochvíl & Delpada (2015: 230) on Abui (Papuan), Sato (2019) on Indonesian.

Take for instance the Mandarin example (1). This sentence is true if Yuehan put the book into the fire, and the book *didn't start burning at all* before I took it away (because it was too humid to catch fire, for instance). Similarly, (2) may be true if Lulu tried to close the door, but the door *didn't start closing* because something blocked it. Park (1993) and Beavers & Lee (forthcoming) make similar observation for Korean; see also (3), and Sato (2019) reports that failed-attempt/zero-change uses are also possible in Indonesian. The French or English examples (5)-(6) are similar, but with an important difference: while the predicates in (1)-(4) are run-of-the-mill

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[1] Abbreviations used: ACC=accusative; CL=classifier; IMP=imperfective; INT=intransitivizer; PFV=perfective; NEG=negation; NOM=nominative; PROG=progressive; REFL=reflexive; TR=transitivizer.

[2] Atypical agents and instruments are beyond the scope of this paper. On the former, see Beavers & Lee (forthcoming) and Martin (2016) and references therein.

causative predicates, those in (5)-(6), although also causative, embed a sublexical modal operator, and are in that sense not 'standard' causatives (see section 3.2).[3]

(1) MANDARIN, Demirdache & Martin (2015)
Yuēhàn **shāo** le   tā-de   shū, dàn gēnběn méi   shāo-zháo.
Yuehan burn PFV 3SG-DE book but at.all   NEG.PFV burn-ignite
'Yuehan burned his book, but it didn't get burnt at all.'

(2) MANDARIN, Martin et al. (2018a)
Lùlu **guān-le**   nèi-shàn mén, dàn gēnběn méi guān-shàng.
Lulu close-PFV that-CL   door but at-all   NEG close-up
'Lulu closed that door, but it didn't get closed at all.'

(3) KOREAN, Jiyoung Choi (p.c.)
Chelswu-nun   mwul-ul   **el-li-ess**-una,   mwul-i   an
Chelswu-TOP   water-ACC   freeze-CAU-PAST-but   water-NOM   NEG
el-ess-ta.
freeze-PFV-DEC
'Chelswu froze the water, but the water did not freeze.'

(4) INDONESIAN, Sato (2019)
Esti **men-tutup** pintu, tapi tidak ter-tetup.
Esti TR-close   door   but NEG INTR-close
'Esti closed the door, but it didn't close.'

(5) FRENCH, Martin (2015)
Dr Li **m'a   soigné**, (mais je n'ai   pas guéri du tout).
dr Li me=has treated but   I   NEG=has NEG cured at   all
'Dr. Li **treated** me, but I didn't recover at all.'

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[3]I take for granted that the predicates used in the examples (1)-(6) have a causative event structure; for explicit arguments in favour of this assumption, see Koenig & Davis (2001) (English), Martin & Schäfer (2013) (French, English and German), Martin et al. (2018a) (Mandarin), Park (1993) and Beavers & Lee (forthcoming) (Korean). Note that Beavers & Lee (forthcoming) analyse the Korean causative predicates licensing a zero-change reading as encoding a sublexical modal operator, and thus as non-standard causatives, on a par with *teach*-verbs in English. The alternative option briefly discussed in section 9 is that the Korean predicates are standard causative predicates just like in Mandarin (or the English translations of the same verbs), and the zero-change use is licensed by the simple past marker -*ess*-.

(6) ENGLISH, adapted from Oehrle (1976)
John **taught** Mary how to iron sheets (although in spite of the fact that she saw him do it, she still doesn't know how it is done).

By contrast, sentences built with the same predicates used non-agentively entail at least a part of a change developing towards a *P*-state in the theme's referent (the zero-change reading is generally not felicitous); see (7)-(12).

(7) MANDARIN, Demirdache & Martin (2015)

Huǒ	**shāo le**	tā-de	shū,	#dàn	méi	shāo-zháo.
fire	burn-PFV	3SG-DE	book	but	NEG.PFV	burn-touch

Intended: 'The fire burned her book, but it didn't get burnt at all.'

(8) MANDARIN

Nà-zhen	feng	**guān-le**	nèi-shàn	mén,	#dàn	gēnběn	méi
that-CL	wind	close-PFV	that-CL	door	but	at-all	NEG.PFV

guān-shàng.
close-up

Intended:'That gust of wind closed that door, but it didn't get closed at all.'

(9) KOREAN, Jiyoung Choi (p.c)

Hanpa-ka	gangmwul-ul	**el-li-ess**-una	#ganmwul-i	an
cold.wave-NOM	river-ACC	freeze-PAST-BUT	river-NOM	NEG

el-ess-ta.
freeze-PAST-DEC

Intended: 'A cold wave froze the river, but the river didn't freeze.'

(10) INDONESIAN, Sato (2019)

Angin	**men-tutup**	pintu,	#tapi	tidak	ter-tetup.
wind	TR-close	door	but	NEG	INTR-close

Intended: 'The wind closed the door, but it didn't close.'

(11) FRENCH, Martin (2015)

Ce	séjour	chez	sa	soeur	l'a	**soignée**,	(#mais	elle	n'a	pas
this	stay	at	her	sister	she=has	treated	but	she	NEG=has	NEG

guéri du tout).
cured at all

'This stay at her sister's treated her , (#but she didn't recover at all).'

(12)　ENGLISH, adapted from Oehrle (1976)
　　　John's demonstrations **taught** Mary how to iron sheets (#although in spite
　　　of the fact that she saw her do it, she still doesn't know how it is done).

For Romance and Germanic, Martin & Schäfer (2012) gather around 50 defeasible
causative verbs. In Mandarin, (standard) causative monomorphemic verbs allowing
the zero-change use are few (less than twenty), but of very frequent use. Martin
et al. (2018a) note that when these Mandarin verbs are used intransitively, the
zero-change reading is infelicitous; at least a partial change is entailed. This is also
true for the Korean, Indonesian, or French, see (13)-(17); cf. Lyutikova & Tatevosov
(2010: p.64) for a related observation in Karachay-Balkar.

(13)　MANDARIN, Martin et al. (2018a)
　　　Mén **guān le**, (#dàn gēnběn méi　　guān-shàng).
　　　door close PFV but　at-all　NEG.PFV close-up
　　　Intended: 'The door closed (but it didn't get closed at all).'

(14)　MANDARIN, Martin et al. (2018a)
　　　shū **shāo-le**, (#dàn gēnběn méi　　shāo-zháo).
　　　book burn-PFV but　at all　NEG.PFV burn-ignite
　　　Intended: 'The book burned, but it didn't get burnt at all.'

(15)　KOREAN, Jiyoung Choi (p.c.)
　　　Kang-i　**el-ess**-ciman　#(kang-i)　el-ci anh-ass-ta.
　　　river-NOM freeze-PAST-but river-NOM freeze-NEG-PFV-DEC
　　　Intended: 'The river froze, but the river didn't freeze.'

(16)　INDONESIAN, Sato (2019)
　　　Pintu **ter-tutup**, #tapi tidak ter-tutup.
　　　door INTR-close but　NEG　INTR-close
　　　Intended: 'The door closed, but it didn't close.'

(17)　FRENCH
　　　Ma blessure **s'est　soignée** (toute seule), #mais elle n'a　　pas
　　　My wound　REFL.is treated　(by　itself) but　she NEG.has NEG
　　　guéri　du tout.
　　　cured　at　all
　　　'My wound cured (lit.: treated) by itself, but it didn't cure at all.'

The main goal of this paper is to provide an account for the contrasts presented above, elaborating on the analysis developed in Martin (2015) and solving some of its shortcomings. The paper is structured as follows. In section 2, I report experimental studies and surveys suggesting that the degree of acceptance of the zero-change use of causative predicates at study varies across languages, focusing on Mandarin on one hand, and French and English on the other. This difference is accounted for in section 7. Section 3 identifies the source of the zero-change uses for these two sets of languages. In section 5, I show how the Voice head introducing agents vs. causers combines with causative VPs, and how the semantic difference between these two voice heads influences the interpretation of the VP-event, and, in particular, the way the causing event type denoted by the VP is tokenized (i.e., mapped to event tokens in the model). I then argue that the semantic difference between the two heads ultimately explains why typically, zero-change uses of causative VPs are acceptable with agents only, starting with standard lexical causative verbs in section 6.1, and then addressing defeasible causative verbs in section 6.2. Section 8 accounts for why the zero-change reading is occasionally accepted by some speakers even with a causer subject.

2 Degree of acceptance of the zero-change reading of causative predicates

2.1 Mandarin

The availability of incomplete interpretations of causative predicates has been tested in several experimental studies. However, only a few of them distinguish between situations where no change towards a *P*-state is observable—Tatevosov's (2008) failed attempt situations, e.g., the door doesn't even start closing while an agent tries to close it—and situations such that a change towards a *P*-state obtains, although not leading to a *P*-state—Tatevosov's (2008) partial result situations, e.g., the door started closing, but did not end up closed. These two types of incomplete situations are conflated in Chen's (2017) truth-value judgment tasks on adult vs. child Mandarin, and in Arunachalam & Kothari's (2010) truth-value judgement tasks on adult Hindi. The partial-change reading of causative predicates is much less constrained than the zero-change use; it is felicitous for a much broader range of predicates and does not require an agentive subject as the zero-change reading does (Demirdache & Martin 2015). For Mandarin, however, van Hout et al. (2017) and Liu (2018) carefully distinguish them. Besides, they test these predicates in both agentive and non-agentive uses, and thus enable one to evaluate the impact of the thematic properties of the external argument on the aspectual properties of the ensuing causative statement.

The results of the truth-value judgement tasks reported in van Hout et al. (2017)

and Liu (2018) are interesting in two respects. Firstly, they confirm that the change inference triggered by some Mandarin causative simple (monomorphemic) verbs seems indeed defeasible when they are used with an agent subject, while change is perceived as entailed by most speakers when the same predicates are used with a causer subject. But these results also suggest that even with an agent subject, the change inference is quite strong; for instance, among the 30 adult speakers she tested, Liu (2018) observed a mean of 40% acceptance (across all verb types) for perfective causative statements in a situation where no change towards a *P*-state obtains. This is certainly higher than what is observed by van Hout et al. (2017) with standard causative predicates such as *open* in adult English, Dutch, Spanish or Basque (where none of the adults tested accepted the zero-change use for these predicates in perfective sentences, which is expected given that the perfective marker in these languages require event completion, i.e. is not partitive), but it is nevertheless far from unconditional acceptance. Liu (2018) also reports an important variation from predicate to predicate; for instance, she observes that while 70 % of the subjects accept the perfective form of *zhé* 'cut' in a zero-change situation, only 37% of them accept it for the verb *kāi* 'open' (see Liu 2018 and Martin et al. 2018b for an explanation of this difference).

In summary, the available data suggest that the zero-change reading of causative simple (monomorphemic) verbs in Mandarin, although possible, is nevertheless quite restricted. An appropriate account should explain this restriction.

2.2 Romance and Germanic

Experimental data on the interpretation of predicates such as *teach* in Romance or Germanic are scarce, but the available data suggest that in striking contrast with Mandarin, these predicates used with an agentive subject are very easily accepted by adult speakers in a context where the targeted change does not obtain at all. For instance, Kazanina et al.'s (forthcoming) Experiment 1 shows that 90% of the 29 adult speakers tested accepted sentences such as *Jane threw the frisbee to Woolly* as a description of an intended but failed transfer.[4] A paper and pencil judgment survey I conducted on French verbs led to similar results. The survey tested three conditions (Agent, Instrument and Causer subjects) with two different predicates, namely *soigner* 'treat/cure' and *enseigner* 'teach'. Participants (N=19) had to rate causative statements followed by a denial of causal efficacy (sentences such as (5)

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[4]Kazanina et al. use the *to*-variant of these verbs, which has been claimed to license the failed attempt use more easily than the double-object variant. But Oehrle (1976) shows that many verbs of transfer of possession entail successful transfer on either variant, while with agentive subjects, verbs such as *offer* fail to entail caused possession in either variant; see also the discussion in Rappaport Hovav & Levin (2008: section 5).

N=19	Agent	Instrument	Causer
soigner 'treat/cure'	4,8	2,8	1,7
enseigner 'teach'	4,8	4,1	2,3

Table 1   Survey 1: Mean score judgments on a [0-5] scale for the zero-result use of *soigner* and *enseigner* (0=totally unacceptable; 5=totally acceptable)

vs. (11) above), on a [0-5] scale (0=totally unacceptable; 5=totally acceptable). As the results in Table 1 shows, causal efficacy is perceived as entailed with causer subjects, but can be very easily denied with agents, and this at a much higher level than with run-of-the-mill causative monomorphemic verbs in Mandarin.

We therefore have one research question more on our agenda: why is the change inference with agents stronger in Mandarin than in French or English, at least with the predicates tested in the respective experiments? This question is addressed in section 7. In the next section, I turn to the question of the *source* of the zero-change use of causative predicates in the different types of languages under study.

3   The source of the zero-change use across languages

3.1   Via outer aspect

For South and East Asian languages such as Thai and Hindi, Koenig & Muansuwan (2000) and Altshuler (2014, 2017) after them suggested that incomplete (non-culminating) interpretations of accomplishments are licensed by the perfective marker in these languages. As these authors argue, the standard definition of the perfective is not appropriate for languages such as Thai or Hindi. According to this standard definition, the perfective operator PFV entails that the event e it existentially quantified over falls under the respective predicate P, and since predicates denote properties of complete events, e is complete with respect to P, see the definition in (18), where C stands for 'complete' and P is a variable for an eventuality predicate (the neo-Kleinian relation between the topic time and the event time, not relevant for our purposes, is here ignored; see Altshuler 2016 for a comparison between Kleinian and non-Kleinian approaches of (im-)perfectivity).

(18) $[\![\mathrm{PFV}_C]\!] = \lambda P \exists e[P(e)]$ (standard perfective)

These authors propose to distinguish two types of perfective operators. The perfective in Thai or Hindi entails *event maximality*, but not event completion, and is

in that sense a *partitive operator* (Altshuler 2014): the reported event has to cease, but does not necessarily culminate.

Altshuler (2014) offers a modal definition of event maximality, according to which MAX(e, P) is satisfied if e is a complete P-event or ceases to develop further towards a P-event in the actual world. Simplifying things, Altshuler's (2014) definition is as follows; his definition is more elaborate, and also uses Landman's (1992) stages, not just event parts:

(19) MAX(e, P) :=

    a. e is a part of a possible P-event and

    b. e is not a proper part of any actual event that is part of a possible P-event.

(20) $\llbracket \text{PFV}_M \rrbracket = \lambda P \exists e[\text{MAX}(e, P)]$ (weak perfective)

Take for instance the first clause of (21), whose semantic representation is given in (21c) (the full derivation is in (52)). The infelicity of (21a) is due to the fact that the second clause indicates that the event described in the first one is not maximal (given that it is still ongoing at utterance time). By contrast, (21b) is acceptable (despite that the reported event is not complete with regard to the predicate used), because the maximality requirement is not overtly violated.

(21)   MANDARIN

    a.   #Lùlu kāi-le   nèi-shàn mén, érqiě hái zài   kai.
           Lulu open-PFV that-CL   door   and   still PROG open

           Intended: 'Lulu opened that door, and she is still opening it.'

    b.   Lùlu kāi-le   nèi-shàn mén, dànshì mén gēnběn méi   kāi.
           Lulu open-PFV that-CL   door but   door at all   NEG.PFV open

           'Lulu opened that door, but it didn't open at all.'

    c. $\exists e(\text{MAX}(e, \lambda e'.\exists s(\textbf{agent}(e', \textbf{lulu}) \wedge \textbf{cause}(e', s) \wedge$
           $\textbf{close}(s) \wedge \textbf{theme}(s, \textbf{the-door}))))$

Following Martin & Gyarmathy's (forthcoming), I call 'weak perfective' the perfective which requires event maximality only (see (22)), such as the Hindi perfective.

(22) $\llbracket \text{PFV}_M \rrbracket = \lambda P \exists e[\text{MAX}(e, P)]]$ (weak perfective)

Some authors have suggested that the Mandarin perfective *-le* is not completive either (see in particular Smith 1997, Soh & Gao 2007, Koenig & Muansuwan 2000, and Altshuler 2017), and suggested that the Mandarin perfective may be similar to the Hindi perfective (see als Martin et al. 2018a, Martin forthcoming, Martin

& Gyarmathy forthcoming).[5] I follow these authors in the assumption that the zero-change use of run-of-the-mill causative monomorphemic verbs in Mandarin is licensed by the perfective -le in this language.

3.2 Via sublexical modality

Unlike Mandarin or Hindi, Germanic and Romance languages do not have partitive perfective aspectual operators, which explains why the Germanic and Romance literal counterparts of Mandarin, Korean or Hindi examples in section 1 are all contradictory. To explain why verbs such as *offer* or *teach* nevertheless do not entail the occurrence of a *P*-state they encode lexically, Koenig & Davis (2001) introduce a sublexical modal component, which evaluates the relations between participants and eventualities at various world indices, see e.g. the paraphrase (23b) of (23a).

(23) a. Ivan **taught** the basics of Russian to Mary, but she did not learn anything.
      b. Ivan caused Mary to know the basics of Russian in all worlds where the goal of his teaching is achieved.

On this view, such verbs involve a **cause** relation exactly as Mandarin causative monomorphemic verbs. But contrary to what happens with the latter, the encoded result state is in a scope of a sublexical modal operator (a modal base). Since the world of evaluation is not necessarily included in the modal base, the result state does not have to take place in the actual world (hence why Martin & Schäfer (2017) call these verbs *defeasible causatives*). In the spirit of Koenig & Davis (2001), Martin & Schäfer (2017) propose lexical representations such as (24) for *enseigner* 'teach', where the encoded modal base includes all causally successful worlds.

(24) enseigner y à z 'teach y to z/ z y' $\rightsquigarrow$
      $\lambda y \lambda z \lambda e.\textbf{teach}(e) \wedge \textbf{theme}(e, y) \wedge \textbf{recipient}(e, z) \wedge$
      $\quad \Box_\rho \exists s (\textbf{cause}(e, s) \wedge \textbf{know}(s) \wedge \textbf{theme}(s, y) \wedge \textbf{holder}(s, z))$

Observe that according to (24), defeasible causatives encode a manner property associated to the causing event (the **teach** property in (24)), beyond the result

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[5]Interestingly, languages with a non-completive perfectives often have serial verbs or verbal compounds that *do* convey completion when combined with a weak perfective (see Martin & Gyarmathy forthcoming for an account). So there seems to be a division of labor at play here between outer and inner aspect: in languages such as Hindi or Mandarin, the perfective does not need to require completion because serial verbs or verbal compounds can take this job when combined with this form.

property associated to the result state.[6] Thus when the causing event *e* is bound by an aspectual operator requiring event completion, such as the English simple past or the French *passé composé*, the causing event *e* has to be complete with respect to this manner predicate. This is a welcome prediction; for instance, (23a) is false if Ivan didn't perform a complete teach-the-basics-of-Russian event. But of course, an event which is complete with regard to the VP *teach the basics of Russian* may nevertheless be unsuccessful, precisely because the result state is under the scope of a modal encoded operator. That an event may be complete with regard to a defeasible causative without being a successful event explains why zero-change uses are still acceptable in presence of an *in*-adverbial; see (25).

(25) Ivan a enseigné   le   matériel de base aux   étudiants en   trois
      Ivan teach.PFV.3SG the material of basis to-the students in   three

      semaines, mais ils   n'ont   encore rien   appris.
      weeks,   but they NEG=has   still nothing learned

      'Ivan taught the basic material to the students in three weeks, but they still don't know anything.'

Section 6.2 shows how predicates such as (24) compose with the Voice head introducing causer subjects, and argues that if the resulting structure tends to entail a result state despite the fact that it is in the scope of the modal operator, it is because the teaching event type is by default understood as tokenized by a *learning* event taking place in the theme's referent.

4   Shortcomings of Martin (2015): the problem of action-denoting causers

In Martin (2015), I offered an account of the link between agenthood and deniability of causal efficacy mainly capitalizing on two distinctive and related properties of agentive causation events, typically not exhibited by non-agentive causation events. Whereas I still believe that this analysis is on the right track, I think it does not pay enough attention to the way the verbal predicate is combined with the functional head introducing the external argument. That the properties by which agentive causation events differ from non-agentive causation events cannot be the

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[6]Note that *enseigner* 'teach' does not specify how exactly the manner is instantiated, but as Rappaport Hovav & Levin (2010) observes about the verb *exercise*, manner verbs may remain rather unspecified about the specific instantiations of the manner encoded. Thus *exercise* requires an unspecified set of movements, whose only defining property is that they involve some sort of activity. There are however conventional ways of teaching *with an agent*, and *teach* on its agentive uses seems to get associated with them. More generally, actions are more indicative of their potential effects than non-agentive events, see Martin (2015).

single factor at play is well illustrated by the contrast between (6) and (12) repeated below.

(6) John **taught** Mary how to iron sheets (although in spite of the fact that she saw him do it, she still doesn't know how it is done).

(12) John's careful demonstrations **taught** Mary how to iron sheets (#although in spite of the fact that she saw him do it, she still doesn't know how it is done).

Both (6) and (12) indicate that an agent is involved in the causation event reported. However, the action is nominalized in a nominal description in subject position in (12), but not in (6). And as the continuation in parenthesis indicates, a change developing towards a state of knowledge is much more strongly implicated by (12) than by (6).

The same contrast can be replicated in Mandarin, albeit action-denoting nominal expressions in subject position of causative monomorphemic verbs are quite marked (Jinhong Liu, Hongyuan Sun, p.c.). But to the extent that these sentences are acceptable, they do not licence the zero-change use with predicates which licence this use with a subject denoting an agent; see (26) vs (2).

(2) MANDARIN
Lùlu **guān-le**   nèi-shàn mén, dàn gēnběn méi   guān-shàng.
Lulu close-PFV that-CL   door but at-all   NEG.PFV close-up

'Lulu closed that door, but it didn't get closed at all.'

(26) MANDARIN, Jinhong Liu & Hongyuan Sun, p.c.
$^?$Yuehan de dongzuo   **guān-le** nèi-shàn mén, #dàn gēnběn méi
Yuehan DE movement close-PFV that-CL   door but   at-all   NEG.PFV
guān-shàng.
close-up

Intended:'Yuehan's movement closed that door, but it didn't get closed at all.'

So in summary, subjects denoting an action have the same effect as causer subjects: they tend to strengthen the occurrence that a change occurs. In the following, I treat action-denoting subjects as causer subjects, i.e. as eventuality-denoting subjects.

I argue below that the way the subject is semantically combined with the VP is crucial for the inference of causal efficacy triggered by the sentence. The output of this compositional step very much depends on the semantics of the functional head introducing the subject, which differs with the type of subjects introduced—agents

or causers. The following sections address this point in detail, starting with the case of standard causative verbs such as *kill*.

5   A closer look at the semantic flavours of Voice

5.1   Basic assumptions

Let me first spell out some basic assumptions on the syntax and semantics of lexical causative verbs forming the background of this study. In the spirit of Distributed Morphology, I adopt the idea that a derivation starts with a non-decomposable root, which combines with functional categories to build words (Marantz 1997, Embick & Noyer 2006). Voice is the functional category introducing the external argument of the predicate it combines with (Kratzer 1996). Voice is ambiguous, and has a different denotation depending on whether it introduces a causer or an agent external argument (Harley 2007, Schäfer 2008). One of the key properties of the functional head introducing agent subjects—Voice$_{ag}$—is that it does not introduce any further event, but only relates the external argument x it introduces to the event e introduced by the predicate it combines with, and specifies that x is the agent of e (Kratzer 1996). By contrast, the head introducing causer subjects—Voice$_c$—introduces a further eventuality v argument (saturated by the event description in the subject position), as well as a relation R between this eventuality v and the event e introduced by the predicate Voice$_c$ attaches to (Pylkkänen 2008). A key question that probably did not receive the attention it deserves concerns the nature of the relation R.

Another assumption I adopt here is Kratzer's (2005) idea—further elaborated on in Schäfer (2008) and Alexiadou et al. (2006, 2015) among others—that we can dispense with the become predicate in the representation of lexical causatives, and simply be left with a causing event e and a result state s. Under this view, causative and anticausative predicates have exactly the same event structure, and semantically differ only by the presence vs. absence of Voice (Schäfer 2008). Take e.g. *shā* 'kill' in Mandarin, which can be also used as an anticausative for a subset of Mandarin speakers (Martin et al. 2018a).

(27)   *shā Fido* 'kill Fido/Fido die' $\rightsquigarrow$
      $\lambda e.\exists s(\mathbf{cause}(e, s) \wedge \mathbf{dead}(s) \wedge \mathbf{theme}(s, \mathbf{fido}))$

On its anticausative use, *shā Fido* receives the meaning (27), while on the agentive causative use, it receives the meaning in (28b). On this view, the causative alternation is essentially a Voice alternation (Kratzer 2005, Schäfer 2008); predicates have the same event structure in both anticausative and causative vps.

(28) a. $\text{Voice}_{ag} \rightsquigarrow \lambda P \lambda x \lambda e.\textbf{agent}(e,x) \wedge P(e)$

b. $\text{Voice}_{ag} \; [\textit{shā Fido}] \rightsquigarrow$

$[\lambda P \lambda x \lambda e.\textbf{agent}(e,x) \wedge P(e)]$

$(\lambda e.\exists s(\textbf{cause}(e,s) \wedge \textbf{dead}(s) \wedge \textbf{theme}(s,\textbf{fido})) =$

$\lambda x \lambda e.\exists s(\textbf{agent}(e,x) \wedge \textbf{cause}(e,s) \wedge \textbf{dead}(s) \wedge \textbf{theme}(s,\textbf{fido}))$

5.2 Tokenizing causative event types

What has perhaps been overlooked in this line of research is that crucially, the event type, although identical in both anticausative and (agentive) causative uses, is tokenized in a different way (i.e., is mapped with different event tokens in the model), because the *number of participants* involved in the causation events in the denotation of the vp is different.[7]

In the intransitive use, only one participant is involved in the denoted causation events, namely the theme's referent. Therefore, the event type $\lambda e...P(e)...$ is tokenized by *changes-of-state* of the participant—aka become events. For instance, in its anticausative use, the causing events denoted by *shā* 'kill/die' in (27) are *dying* events. That is, when causative predicates are used anticausatively, the causing events they denote are *changes-of-state*. So in a sense, become is in this framework redefined as a hyponym of cause:[8] changes-of-state are a subtype of causing events, namely proximate causes involving the theme of the result state only. Let me emphasize that it is not so unnatural, and in fact quite meaningful, to conceive a change developing towards a *P*-state as *a* cause of this state. A dying event is in a sense *a* (proximate) cause of the death it develops into; an event of becoming sick can be conceived as *a* cause of the state of sickness it develops into, or an getting-opened-event can be seen as *a* cause of the state of being open. And in fact, causative analyses have been proposed for inchoative verbs; see, Kratzer (2005), or Piñón (2011) on Hungarian. The reluctancy to conceive become-events as cause-events is probably partly rooted in the assumption that an event has a *single* cause (and we do not want to identify a change developing into a *P*-state as *the* most prominent cause of this state). But this assumption is wrong; as Lewis (1973), Kvart (2001) and many others (e.g. Dowty 1979 and Neeleman & Van de Koot 2012 on the linguistic side) emphasize, a given eventuality often has many, many causes. As Kvart (2001) notes, the selection of one cause as *the* cause is context-dependent and interest-relative. That the event type denoted by anticausatives is tokenized by the most proximate causes, namely a change in the theme's referent, does not

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[7]I do not make use of event kinds (see Gehrke 2019 for an overview). A token of the event type denoted by P is here simply understood as an event in the extension of P.

[8]Thanks to Bridget Copley for pushing me to make this assumption explicit.

preclude the existence of other (more remote) causes of the encoded result state. These distal causes can be denoted by adjuncts such as *from*-PPs, for example. Obviously, the causing event type is tokenized very differently when the causative verb is used transitively. In the *agentive* transitive use, *two* participants are necessarily involved in the denoted causing events e, namely the subject's referent—the agent of e—*and* the theme's referent. As a result, the event type $\lambda e...P(e)...$ is naturally tokenized by more *complex* event tokens in the model. That is, the events e instantiating this type are necessarily understood as made of two subparts, namely, an action performed by the subject's referent (for x cannot be the agent of e without doing anything), *and* an ensuing change-of-state in the theme's referent (for y cannot be in a result state s that it was not in before without changing its state). Crucially, however, the two subparts of the complex event tokens instantiating the agentive event type $\lambda e...P(e)...$ do *not* correspond to two different sub-events in the event structure projected by causatives used with an agent subject. Rather, the sum of these two sub-event parts instantiates a *single* causing event in the denotation of the predicate, not decomposable at the semantic level. In particular, these two parts cannot be separately accessed by modifiers, as Fodor (1970) was one of the first to observe.

The proposal developed in section 5.4 is that the story is entirely different when the transitive use is built with the non-agentive Voice$_c$, because Voice$_c$ has a different semantics than Voice$_{ag}$. Before that, building on Martin (2018), I develop in the next section the idea that in the default case, Voice$_c$ introduces an eventuality v understood as *causing* a causing event e in the denotation of the VP (rather than being identified with e, as proposed by Pylkkänen 2008 or Alexiadou et al. 2015 a.o.). To address the semantic difference between the two Voice heads, I start with a famous observation of Fodor (1970) on lexical causative predicates.

5.3 The semantics of Voice$_{ag}$ vs. Voice$_c$

5.3.1 Fodor revisited

Fodor (1970) argued against a decomposition of lexical causative predicates in a CAUSE and BECOME components, e.g., against the decomposition of *kill* into *cause to die*. One of his arguments is that the CAUSE and BECOME events are not accessible for separate adverbial modification by temporal or manner adverbials, while it is with periphrastic causatives, see (29).

(29) a. *Floyd **melted** the glass **on Sunday** by heating it **on Saturday**.
      b. Flord **caused** the glass **to melt on Sunday** by heating it **on Saturday**.

However, it was observed in Martin (2018) that while it is true that separate modification never seems possible with entity-denoting subjects, with eventuality-denoting subjects, it is possible to modify separately the eventuality denoted by the subject, and the (causing) VP-ing event, see the contrast in (30) (in (30a), the reading where the second clause reports an action by Fred taking place on December 25 is irrelevant for the judgment).

(30)   a.   Fred$_i$ accidentally shot his dog on December 23! #He$_i$ eventually **killed** it on Dec. 25.
       b.   Fred accidentally shot his dog on December 23! This gunshot eventually **killed** it on December 25.

Simply assuming with Fodor that the contradiction in (30a) arises as a consequence of the fact that **cause** must relate temporally adjacent eventualities does not work, for many authors have observed that lexical causative verbs may express a causation relating temporally distant eventualities; see Danlos (2000), Rappaport Hovav & Levin 2001, Neeleman & Van de Koot (2012), Beavers (2012), a.o.
In Martin (2018), I proposed that the problem of (30a) is rather a direct consequence of the fact that the temporal adverbial *must* scope on the *single* event in the denotation of the lexical causative verb (namely the causing event), see (31) ('$\tau(e)$' gives the temporal trace of an event e).

(31)   on December 25[kill Fido] $\rightsquigarrow$ $[\lambda P \lambda e.P(e) \wedge \tau(e) \subseteq$ **dec. 25**$]$
       $(\lambda e.\exists s(\textbf{cause}(e,s) \wedge \textbf{dead}(s) \wedge \textbf{theme}(s,\textbf{fido})) =$
       $\lambda e.\exists s(\textbf{cause}(e,s) \wedge \textbf{dead}(s) \wedge \textbf{theme}(s,\textbf{fido}) \wedge \tau(e) \subseteq$ **dec. 25**$)$

When the verbal predicate (31) is combined with Voice$_{ag}$ in (32a), we obtain the relation in (32b).

(32)   a.   Voice$_{ag}$ $\rightsquigarrow$ $\lambda P \lambda x \lambda e.\textbf{agent}(e,x) \wedge P(e)$
       b.   Voice$_{ag}$ [on December 25[kill Fido]] $\rightsquigarrow$
            $[\lambda P \lambda x \lambda e.\textbf{agent}(e,x) \wedge P(e)]$
                $(\lambda e.\exists s(\textbf{cause}(e,s) \wedge \textbf{dead}(s) \wedge \textbf{theme}(s,\textbf{fido}) \wedge \tau(e) \subseteq$ **dec. 25**$)) =$
            $\lambda x \lambda e.\exists s(\textbf{agent}(e,x) \wedge \textbf{cause}(e,s) \wedge \textbf{dead}(s) \wedge \textbf{theme}(s,\textbf{fido}) \wedge \tau(e) \subseteq$ **dec. 25**$)$

This obviously accounts for why sentence (30a) is contradictory: given that (32b) requires x to perform on December 25 an event causing a state of being dead, there is no room left to identify this causing event with a previous action of x taking place on December 23.

5.3.2 A new semantics for Voice$_c$

But then, what happens in (30b)? Pylkkänen (2008) assumes that event-denoting subjects are introduced by another Voice head, that identifies the event introduced by the subject e (e.g., the gunshot in (30b)) and the causing event introduced by the verb (e.g., the killing event in (30b)). Pylkkänen's (2008) Voice, that I call Voice$_P$, may be attributed the semantics in (33), where e is the event introduced by the (eventuality-denoting) subject, which is identified with the event e' introduced by the predicate.[9]

(33) Voice$_P \rightsquigarrow \lambda P \lambda e \lambda e'.P(e') \wedge e = e'$

If such a head was involved in the semantic composition of (30b), this sentence should be contradictory, given that the gunshot would have to take place both on December 23 and December 25. We therefore need another functional element than Pylkkänen's (2008) Voice.

I modify the semantics of this head that I will call Voice$_c$ in two respects. Firstly, the eventuality v argument it introduces can be either an event or a state argument. If the subject is fact-denoting in its literal reading (*The fact that he came so late surprised me*), I assume that the fact is the theme of a covert eventuality (e.g., the event of thinking about this fact). More importantly, the nature of relation R between v and the VP-event e is underspecified; see (34a).[10] However, it strongly tends to be understood as a causal relation, although in marked cases, R can also be interpreted as a relation of (partial or total) overlap, see (34b). I will leave aside this dispreferred interpretation of R as the overlap relation in (34b) until section 8, where it is argued that this marked interpretation of R is chosen in the marginal cases where speakers accept the zero-change use of causative predicates with causer subjects.

(34) a. Voice$_c \rightsquigarrow \lambda P \lambda v \lambda e.R(v, e) \wedge P(e)$
      b. $R = $ **cause** $\vee \circ$

Applying (34a) to (31c), and assuming that R is understood as meaning **cause**, we obtain the verbal predicate (35), involving *three* different eventualities (the dotted components are not entailed by the structure; they result from the choice of one of the possible meanings of R in (34)).

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[9]Pylkkänen's (2008) semantics for Voice is $\lambda x \lambda e.e = x$. In her system, Voice combines with a VP by a rule called Event Identification (Kratzer 1996). I do not make use of this rule, and define Voice as applying to a predicate and adds an external argument to it (see Bruening 2013 for a similar approach).

[10]On this point, I depart from Martin (2018), where I proposed that the head responsible for the introduction of causer subjects necessarily encodes a causal relation.

(35) Voice$_c$[on December 25[kill Fido]] $\leadsto$
[$\lambda P \lambda v \lambda e.\textbf{cause}(v,e) \wedge P(e)$]

($\lambda e.\exists s(\textbf{cause}(e,s) \wedge \textbf{dead}(s) \wedge \textbf{theme}(s,\textbf{fido}) \wedge \tau(e) \subseteq \textbf{dec. 25}$)) =
$\lambda v \lambda e.\exists s(\textbf{cause}(v,e) \wedge \textbf{cause}(e,s) \wedge \textbf{dead}(s) \wedge \textbf{theme}(s,\textbf{fido}) \wedge \tau(e) \subseteq \textbf{dec. 25}$)

Let us now apply the relation in (35) to the definite event description *the gunshot*, and derive the predicate in (36).

(36) The gunshot[Voice$_c$[On December 25[kill Fido]]] $\leadsto$
$\lambda e.\exists s(\textbf{cause}(\textbf{the-gunshot},e) \wedge \textbf{cause}(e,s) \wedge \textbf{dead}(s) \wedge \textbf{theme}(s,\textbf{fido}) \wedge$
$\tau(e) \subseteq \textbf{dec. 25}$)

We can now understand why sentence (30b) is acceptable. Given that the eventuality v denoted by the subject *causes* the causing event e leading to death denoted by the verb (rather than being identified with it), v may, of course, take place before the event e that must take place on December 25, e.g., on December 23. And observe that it is possible to add a temporal modifier within the subject DP that refers to a time different from the modifier applying to the VP, see (37) ((37b) is due to M. Rappaport Hovav, p.c.).

(37) a. Yesterday's stabbing eventually killed him this morning.
     b. The snow melt on Sunday eventually flooded the valley on Thursday.

Another argument in favour of the view that Voice$_c$ is by default understood as introducing an eventuality *causing* the event denoted by the VP is provided by progressive lexical causative sentences. Take, e.g., sentence (38).

(38) Fukushima nuclear accident is still destroying our planet. (uttered in 2019)

Although Fukushima nuclear accident happened (and culminated) in 2011, it may still be destroying the planet today, 8 years later. In (38), the (past) accident e culminated with regard to the **nuclear accident** description in 2011, but *causes* a destroying event which is still ongoing today.

5.4 How (non-)agentivity drives the tokenization of causative event types

The previous section argues that causer subjects introduce a argument slot for an eventuality causing a VP-event. A question arises at this point. When does the causing event e denoted by the VP start, if e is understood as *caused* by the eventuality v denoted by the subject, rather than identified with it? And what *is*

the causing event, if it is not the eventuality v? More concretely, in (30a) repeated below in (39), what is the killing event taking place on December 25, if not the gunshot taking place two days before?

(39)   Fred accidentally shot his dog on December 23! This gunshot eventually **killed** it on December 25.

I would like to argue that when the external argument is introduced by $Voice_c$ (and R interpreted as **cause** as I assume to be by default the case), the causative event type denoted by the vp is tokenized by *changes-of-state* of the theme referent, and caused by the eventuality v introduced by the subject. So for instance, the causing event type denoted by the vp *kill Fido* in (39) is tokenized by a *dying* event endured by Fido. In other words, if we abstract away from the external argument, *a non-agentive causative vp is interpreted the same way as its anticausative counterpart.* The main difference between non-agentive causative vps and anticausative vps is that in the former case, there is an external argument which introduces a slot for an eventuality v causing the event e denoted by the vp, similar to a *from*-PP adjoined to an anticausative, see (40):[11]

(40)   a.   The wind opened the window.
   b.   ≈ The window opened from the wind.

   On this view, the causing event type denoted by lexical causatives is therefore tokenized quite differently depending on whether the subject is an agent or a causer. For as we saw in section 5.2, when the external argument x is introduced by $Voice_{ag}$, the causative event type denoted by the vp is 'fleshed out' by complex events composed of an action of x and a change-of-state (CoS) of the theme's referent y. $Voice_{ag}$ does not add any further event to the causal chain encoded by the vp. This is schematically illustrated in Figure 1a, where the circle in the right panel symbolises the causing event introduced by the vp. In contrast, in the non-agentive use, the causative event type denoted by the vp is fleshed out by *changes-of-state*, themselves caused by the eventuality denoted by the subject; see Figure 1b.
The proposal is summarized in (41).

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[11]There is an interesting similarity with Alexiadou & Anagnostopoulou (forthcoming)'s claim that object experiencer causative psych-verbs used non-agentively lack Voice altogether and simply contain a vp, just like anticausative verbs.

no eventuality denoted by the subject DP   causing event denoted by the VP
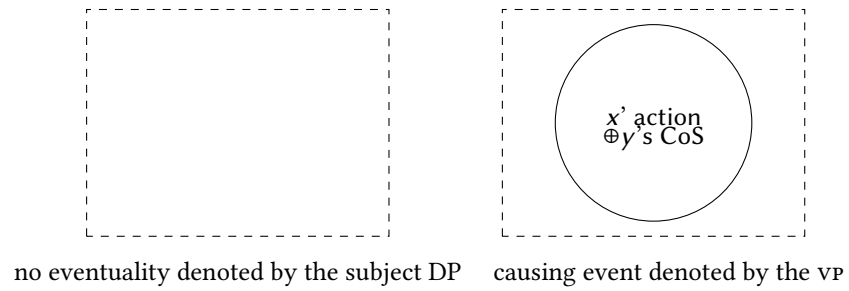
(a) Causal chain denoted by an agentive lexical causative statement

eventuality denoted by the subject DP   causing event denoted by the VP
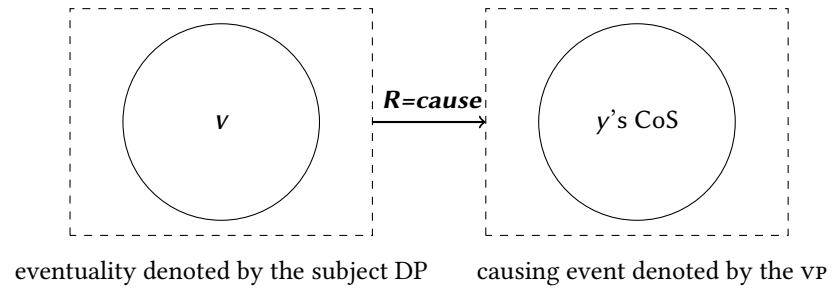
(b) Causal chain denoted by a non-agentive lexical causative statement
(with R=**cause**)

Figure 1   Causal chains denoted by lexical causative statements

(41)   a.   Event types denoted by standard causative vps used agentively are tok-
            enized by complex events composed of an action of the subject's referent
            and an ensuing change-of-state of the theme's referent as their parts.
       b.   Event types denoted by causative vps used non-agentively are tokenized
            by changes-of-state of the theme's referent (when the relation R encoded
            by *Voice$_c$*=**cause**)

The next subsections present in turn three arguments in favour of the proposal
(41).

5.4.1   *In*-adverbials

A first argument supporting (41) concerns the interpretation of *in*-adverbials. An *in*-
adverbial measures the time span between the onset and the telos of the (complete)
events denoted by the predicate, i.e. causing events in the case of a causative
predicate. The telos of these events typically coincides with the onset of the result
state (but see the discussion in Martin 2018: section 4.2). Let us now compare the
interpretation of such adverbials when modifying causatives used non-agentively,
as in (42a), and agentively, as in (42b).

(42)   a.   The poison he swallowed this morning killed him in ten minutes in the
            evening (#this being said, he died in less than a minute).
       b.   Mary killed him in ten minutes (this being said, he died in less than a
            minute).

What we observe is that in (42a), the *in*-adverbial measures the theme's change-of-
state—the dying event, exactly as in the anticausative counterpart of this example
in (43).

(43)   He died in ten minutes this evening from the poison he swallowed this
       morning.

This explains why the continuation in parenthesis in (42a) is infelicitous: it indicates
that the change-of-state e'' culminated in less than a minute, whereas the first
clause specifies that the causing event e, which is by assumption identified with
e'', culminated in ten minutes.
By contrast, in (42b), the *in*-adverbial measures the time span of the causing event e
this time fleshed out by one of x's action e' *and* y's change-of-state e''. Therefore,
the continuation in parenthesis is not contradictory, because it might be that the
time span of the change-of-state e'' is much shorter than the time span of the
causing event e (of which e'' is only a *proper* part).

I conducted an on-line truth-value judgement to probe this difference in the tokenization of the causing event type. I used a Google questionnaire; the participants were 36 native speakers of French (of which 6 were linguists) living in Belgium, France or Germany. The test sentences were lexical causative statements containing an *in*-adverbial, see (44b/d)-(45b/d). The task consisted in judging whether these test sentences were true or false in the given context, described in (44a/c) and (45a/c). In the test sentences, the *in*-adverbial indicates that the causing event starts significantly before the change-of-state endured by the theme. The prediction is therefore that these sentences should be judged false with a causer subject, since by assumption, the causing event is understood as starting when the change-of-state starts with such subjects.

(44)   a.   *Causer-context:* The dishwasher started running at 10.00. At 10.15, Paul was awake, and it was because of the dishwasher. Paul started waking up at 10.13.
         b.   Le   lave-vaisselle a réveillé   Paul en 15 minutes.
              The dishwasher   wake-up-PFV.3SG Paul in 15 minutes.

              'The diswasher woke up Paul in 15 minutes.'
         c.   *Agent-context:* Ana has to wake up Paul and puts her plan into action at 10.00. At 10.15, Paul is awake (and this was because of Ana). He started waking up at 10.13.
         d.   Ana a réveillé   Paul en 15 minutes.
              Ana wake-up-PFV.3SG Paul in 15 minutes

              'Ana woke up Paul in 15 minutes.'

(45)   a.   *Causer-context*: At 10.00, the wind starts blowing in the direction of the window. The window remains closed but after 10 minutes, at one point, the door suddenly opened (what took less than a minute).
         b.   Le   vent a ouvert   la   fenêtre   en 10 minutes.
              the wind open-PFV.3SG the window   in 10 minutes

              'The wind opened the window in 10 minutes.'
         c.   *Agent-context:* At 10.00, Sascha (a 3 years old) decides to open the window which is one meter higher than the living-room table, and immediately starts elaborating a strategy to achieve his plan. At 10.10, the window is opened (because of Sascha). He needed less than a minute for the opening of the window *stricto sensu.*
         d.   Sascha a ouvert   la   fenêtre   en 10 minutes.
              Sascha open-PFV.3SG the window   in 10 minutes

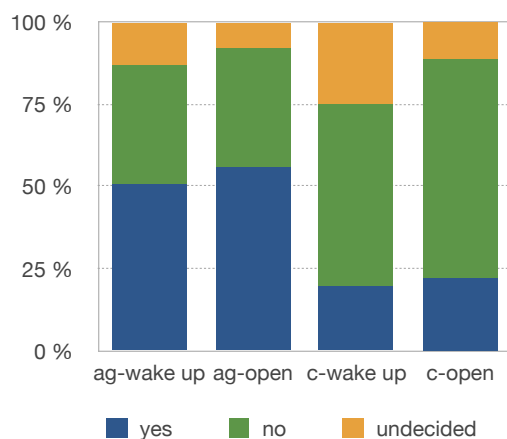   'Sascha opened the window in 10 minutes.'

Figure 2 Survey 2: Yes/No/Undecided answers to the causative test sentences with agents vs. causers subjects in the provided contexts

Three options were provided to the participants (true, false, undecided). The results are summarized in Figure 2. As they show, the test sentences are more often judged true with an agent subject (roughly 50% of 'Yes' answers) than with a causer subject (less than 25% of 'Yes' answers). I take the results to indicate that the causing event (i) can be interpreted as starting before the change-of-state starts with an agent subject (although it is not the default answer, a point to which I return in section 7), while (ii) this interpretation is dispreferred with causers, although still possible for some of speakers (25%). I propose that the speakers arriving at this interpretation with causers do so for they understand the relation R encoded by Voice$_c$ as the overlap relation. As I proposed earlier, this interpretation of R is possible, remember (34), although dispreferred. I come back to this interpretation of R in section 8.

5.4.2 *Begin*-sentences

A second argument in favour of the proposal in (41) concerns the interpretation of sentences where the causative predicate is embedded under the aspectual adverb *begin/start*. When the causative predicate has a causer subject, the *begin*-statement requires the change-of-state to start. For instance, (46a) entails that the theme's referent starts *getting* an idea, and (46b) entails that the stone starts breaking. This is expected if the causative event type denoted by the vp is tokenized by changes-of-state of the theme when the predicate is combined with Voice$_c$.

(46)   a.   The conversation started to give her an idea.
       b.   The heat started to break the stone.

By contrast, when the causative predicate is used agentively, the *begin*-statement entails that an action performed by the subject's referent has started, because the onset of the action is also the onset of the causing event when the causative predicate is combined with Voice_{ag}. And in an appropriate context, an action performed with the goal of triggering a *P*-state may start although no change developing towards a *P*-state has been initiated in the theme's referent yet. This is the case in (47); for instance, (47a) may be true while the theme's referent has not started yet getting an idea, in striking contrast with (46a). Similarly, (47b) is true if the workers start getting to work, and this can happen while they haven't triggered any change in the stone yet. And (47c) is felicitous even if the book hasn't start burning yet as long as Lulu's attempt to burn the book started.

(47)   a.   Paul started to give her an idea (but she is even not listening to him...)
       b.   The workers started to break the stone (but it's so hard, it will take some time before it starts breaking).
       c.   Lulu started to burn the book (but it's so humid, it may take a lot of time before it starts burning).

5.4.3   Progressive sentences

A third argument in favour of (41) concerns the interpretation of progressive lexical causative sentences. Let us look at the actions depicted in the three frames in Figure 3. Clearly, they are all seen as proper parts of (possible) 'open the door'-events, and this while the door didn't start opening yet. For instance, on the basis of the first frame on Figure 3, we are typically ready to endorse the truth of a progressive statement such as *Alice is opening the door*, and this well *before* the door eventually starts opening. This supports the view that event types denoted by causative predicates used agentively are tokenized by complex events starting with the action performed by the subject's referent.

The pattern is very different with nonagentive causers. For instance, we typically hesitate to endorse the claim that the wind *is opening* the window while it has not affected the door yet. This is a well-known observation about progressive causative sentences with inanimate subjects, see, in particular, Bonomi (1997); cf. also Martin (2015).[12] Suppose, for instance, that the water of a brook which has just been diverted is approaching a little meadow. Bonomi (1997) observes that in this context, sentence (48a), which contains a lexical causative, is clearly false. Bonomi suggests that this is due to the fact that the event in progress *e* is not seen as part of an wetting-that-meadow-event. This supports the proposal (41b) according

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[12]I thank Zs. Gyarmathy for drawing my attention to Bonomi (1997) on this issue.
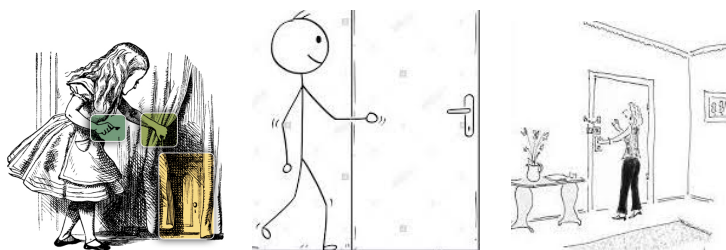
Figure 3   Examples of agentive (still not efficacious yet) openings

to which event types denoted by causative predicates used non-agentively are tokenized by changes-of-state of the theme's referent.

(48)   a.   The water is wetting that meadow.
        b.   I am wetting that meadow.

Interestingly, however, if we take an *agentive* version of (48b), the intuition dramatically changes: if I am diverting the brook in order to wet the meadow, my act *is* seen as a part of a wetting that meadow, and (48b) is felt to be true. This supports, again, the proposal (41a).

Relatedly, Truswell (2011) observed that in a context where the sea is approaching a sandcastle, (49a) is felt to be false—and this even if it is very certain that the sea *will* destroy the sandcastle, while (49b) is true while I'm gathering the instruments I'll be using to destroy the castle, although I haven't touched it yet.

(49)   a.   The sea is destroying the sandcastle.
        b.   I'm destroying the sandcastle.

As Despina Oikonomou (p.c.) observes, the same contrast obtains in (50), where the causer subject in (50b) denotes an action (remember from section 4 that action nominalizations are a subtype of causer subjects): while (50a) can be judged true although Daenerys Targarien hasn't read the messages I am in the middle of writing, it is not the case of (50b), which requires her to have started being affected.

(50)   a.   I'm destroying Daenerys Targarien.
        b.   The writing of these messages is destroying Daenerys Targarien.

I tested Bonomi's (1997) and Truswell's (2011) claims through truth-value judgement tasks on French progressive sentences through a survey. The participants were the same as for the previous survey (N=36), and again, three options were provided

N=36	Sentence (51a)	Sentence (51b)
False	86%(31)	64%(23)
True	3%(1)	22%(8)
Undecided	11%(4)	14%(5)

Table 2   SURVEY 3: True/False/Undecided answers to the progressive sentences (59a/b) in the given context

(true, false, undecided). In the first task, subjects were firstly shown the picture on Figure 4, and were said that the tide was rising in the direction of the sandcastle. The test sentence is given in (51a). In the second task, the same subjects were shown a 30 seconds long video of a house within a tornado, which ends up by a complete destruction of it from the 20th second on (before that, the house was not affected in a visible way yet). They were asked to judge the truth of the test sentence (51b). The results summarized in Table 2 show that the test sentences are overwhelmingly judged false in the provided context, although the subjects know that the ongoing event ultimately develops into a complete VP-event.[13] Again, this supports the proposal (41b) that the event type denoted by causative predicates used non-agentively is tokenized by changes-of-state of the theme's referent: since no 'getting destroyed' change-of-state is ongoing in the depicted situation yet, the event type is felt not to be instantiated yet, and the sentence therefore judged false.

(51) a. Sur cette image, la mer est en train de détruire le
          on this picture the sea is destroying the
          château de sable.
          sandcastle
          'On this picture, the sea is destroying the sandcastle.'

     b. Dans les premières secondes de la vidéo, la tornade est
          in the first seconds of the video the tornado is
          en train de détruire la maison.
          destroying the house
          'In the first seconds of the video, the tornado is destroying the house.'

---

[13]The fact that speakers judge (51b) more often than (51a) in the given context may be due to the fact that it is plausible that the house already endures a change before being visibly destroyed (while the sandcastle can't be affected when untouched by the sea). The video used in the survey is available at youtu.be/M77jJh6B4ok.

Figure 4   Picture of the tide rising in the direction of a sandcastle used in the third survey

6   Accounting for the zero-change use of causative predicates

6.1   Mandarin run-of-the-mill causative simple verbs

This section shows that the proposal in (41) accounts for why in 'weak perfective languages' such as Mandarin, zero-change uses of standard lexical causatives are possible when the external argument is introduced by $Voice_{ag}$, but much less so when introduced by $Voice_c$.

The Mandarin perfective is a partitive aspectual operator, recall section 3.1. Such weak perfectives only require that there be a proper part of a VP-event in the world of evaluation, and do not specify how large this part should be. When the causative predicate is combined with $Voice_{ag}$, the (causative) event type is tokenized in the model by event tokens composed of an action of the subject's referent and a change-of-state of the theme's referent. An action may itself have a causally inert initial part (a part that does not trigger a theme's change-of-state yet). The partitive perfective may therefore quantify over a still causally inert part of an action by the subject's referent. Hence why denying the occurrence of any part of the change does not generate a contradiction.

As an illustration, let us take the example (52a) again. (52b) provides the meaning of the untensed clause. Applying a weak perfective (expressing PFV_M) to the agentive causative predicate in (52b) returns the event description in (52c). In (52c), the event e quantified over is either a (complete) lulu-close-the-door event e', or a proper (maximal) part of such an event e'. In the latter case, e may very well correspond to an act fragment which still has not triggered any change in the theme's referent.

(52) MANDARIN

    a. Lùlu **guān-le** nèi-shàn mén (dàn gēnběn méi guān-shàng).
       Lulu close-PFV that-CL door but at-all NEG.PFV close-up

       'Lulu closed that door (but it didn't get closed at all).'

    b. Lulu[Voice$_{ag}$[close the door]] $\rightsquigarrow \lambda e.\exists s(\textbf{agent}(e,\textbf{lulu}) \wedge$
        $\textbf{cause}(e,s) \wedge \textbf{close}(s) \wedge \textbf{theme}(s,\textbf{the-door}))$

    c. PFV$_M$[Lulu[Voice$_{ag}$[close the door]]] $\rightsquigarrow$
      $\exists e(\text{MAX}(e, \lambda e'.\exists s(\textbf{agent}(e',\textbf{lulu}) \wedge \textbf{cause}(e',s) \wedge$
        $\textbf{close}(s) \wedge \textbf{theme}(s,\textbf{the-door}))))$

Let us now turn to the non-agentive use of causatives. When the causative predicate is combined with Voice$_c$ and the relation R it encodes interpreted as **cause**, the causative event type $\lambda e...P(e)...$ denoted by the VP is by assumption tokenized by changes-of-state of the theme's referent in the model. Therefore, the partitive operator existentially quantifying over the event variable introduced by the VP *must* return a part of such a change.[14] Denying the occurrence of any part of these changes in the subsequent discourse therefore generates a contradiction.

Let us for instance take example (53a) again, for which I provide a partial derivation in (53b/c). The crucial point is that the event e existentially quantified over is now tokenized by a change-of-state of the door.

(53) MANDARIN

    a. Nà-zhen feng **guān-le** nèi-shàn mén (#dàn méi guān-shàng)
       that-CL wind close-PFV that-CL door but NEG close-up

       'The gust of wind closed that door (but it didn't get closed at all).'

    b. Voice$_c$[close the door] $\rightsquigarrow$
      $\lambda v \lambda e.\exists s(\textbf{cause}(v,e) \wedge \textbf{cause}(e,s) \wedge \textbf{close}(s) \wedge \textbf{theme}(s,\textbf{the-door}))$

    c. That gust of wind[Voice$_c$[close the door]] $\rightsquigarrow$
      $\lambda e.\exists s(\textbf{cause}(\textbf{that-gust-of-wind},e) \wedge \textbf{cause}(e,s) \wedge \textbf{close}(s) \wedge$
        $\textbf{theme}(s,\textbf{the-door}))$

    d. PFV$_M$[That gust of wind[Voice$_c$[close the door]]]$\rightsquigarrow$
      $\exists e(\text{MAX}(e, \lambda e'.\exists s(\textbf{cause}(\textbf{that-gust-of-wind},e) \wedge \textbf{cause}(e',s) \wedge$
        $\textbf{close}(s) \wedge \textbf{theme}(s,\textbf{the-door})))$

That zero-change construals are always infelicitous with the intransitive use of causative verbs (recall (13)-(17)) is due the same reason.

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[14]As for the event variable introduced by Voice$_c$, I assume that it is bound at the level of the NP in the specifier checked by Voice$_c$ when the NP is a definite.

6.2   Defeasible causative verbs

In this section, I show how the proposal extends to defeasible causative verbs such as *enseigner* 'teach' or *soigner* 'treat/ cure'. Again, the difference in the strength of the change inference triggered by the agentive vs. non-agentive uses of these verbs reflects the specific way the event type is tokenized in each use. An advantage of this account over the one proposed by Martin & Schäfer (2012) is that the meaning of the vp itself remains constant with causer and agent subjects, as are run-of-the-mill causative vps across agentive vs. non-agentive uses. Martin & Schäfer (2012) have to assume that the vp encodes a different type of modal base in the agentive vs. non-agentive use; in the current proposal, the modal base is the same across all uses: it contains all 'causally successful worlds'.
Let us start with the agentive use, see (54).

(54)   a.   Ivan **a enseigné**   à Marie les rudiments de la   médecine (mais
Ivan teach.PFV.3SG to Mary the basics   of the medicine (but

elle n'a   encore rien   appris du tout)
she NEG.has still   nothing learned at all)

'Ivan taught the basics of medicine to Mary (but she still hasn't learned anything at all).'

b.   Voice$_{ag}$ ⤳ $\lambda P \lambda x \lambda e.$**agent**$(e,x) \wedge P(e)$

c.   Voice$_{ag}$[enseigner à Marie les rudiments de la médecine] ⤳ $\lambda x \lambda e.$**teach**$(e) \wedge$
    agent$(e,x) \wedge$ **theme**$(e,$**the-basics-of-med.**$) \wedge$ **recipient**$(e,$**mary**$) \wedge$
        $\Box_\rho \exists s($**cause**$(e,s) \wedge$ **know**$(s) \wedge$ **theme**$(s,$**the-basics-of-med.**$) \wedge$
            holder$(s,$**mary**$))$

d.   Ivan[Voice$_{ag}$[enseigner à Marie les rudiments de la médecine]] ⤳
    $\lambda e.$**teach**$(e) \wedge$ **agent**$(e,$**ivan**$) \wedge$ **theme**$(e,$**the-basics-of-med.**$) \wedge$
        recipient(e, **mary**) $\wedge \Box_\rho \exists s($**cause**$(e,s) \wedge$ **know**$(s) \wedge$
            theme$(s,$**the-basics-of-med.**$) \wedge$ **holder**$(s,$**mary**$))$

The remarkable thing here is that differently from what happens with run-of-the-mill causative verbs, the causing event type denoted by defeasible causatives is tokenized by *actions* of the subject's referent only. Causing events denoted by defeasible causatives do not necessarily include a change in the theme's referent, *precisely because the targeted result state is in the scope of the modal*. Remember that in the case of standard causatives, the causing event e *has* to include a change, for e cannot *cause* a result state s in y without y enduring a change. But with defeasible causatives, the higher event e is causally efficient in the worlds contained in the modal base only. Thus e is not necessarily composed of a change in the theme's referent y. So for instance in (54a), the event type $\lambda e....P(e)....$ is tokenized by teaching actions of Ivan, which may unfortunately culminate although the

causing event denoted by *teach*   causing event denoted by *open*
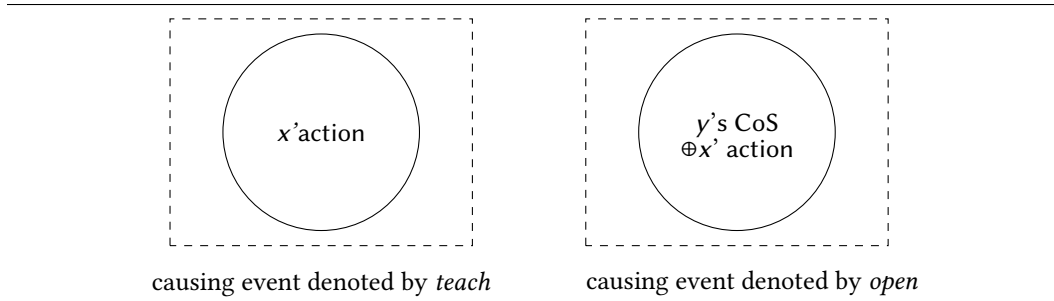
Figure 5   Causing events denoted by defeasible vs. standard causative verbs used agentively

teachee hasn't made any step forward yet. Thus if we only consider the causing event and abstract away from the result state under the modal operator, defeasible causatives used agentively very much resemble manner (non-core transitive) verbs. This is probably why these verbs have been classified as activities (see, e.g., Piñón 2014) or are felt to be 'less prototypically causative' than standard causatives such as *open* (as an anonymous reviewer suggests). The difference in the way the causative event type is tokenized by defeasible vs. standard causative verbs is illustrated in Figure 5. The proposal (41a) has therefore to be slightly modified for this subclass of causatives, see (55a).

(55) a. Event types denoted by defeasible causative VPs used agentively are tokenized by actions of the subject's referent.
  b. Event types denoted by causative VPs used non-agentively are tokenized by changes-of-state of the theme's referent (when the relation R encoded by *Voice$_c$*=**cause**)

For the non-agentive use, however, the hypothesis remains the same ((55b) is identical with (41b)). That is, defeasible causatives VPs tend to entail a change when combined with *Voice$_c$* because the causing event type is then tokenized by changes-of-state of the theme's referent. I illustrate the idea through (56a).

(56) a. Cette expérience **a enseigné**   à   Marie les rudiments de la
     this   experience teach.PFV.3SG to Mary the basics   of the
     médecine (#mais elle n'a   encore rien   appris du tout).
     medicine (but   she   NEG.has   still   nothing   learned at all)
     'This experience taught Mary the basics of medicine (but she still hasn't learned anything at all).'
  b. Voice$_c \rightsquigarrow \lambda P \lambda e \lambda v.\textbf{cause}(v, e) \wedge P(e)$

c. Voice$_c$[enseigner à Marie les rudiments de la médecine]$\rightsquigarrow \lambda v \lambda e.\textbf{cause}(v,e) \wedge$

$\textbf{teach}(e) \wedge \textbf{theme}(e, \textbf{the-basics-of-med.}) \wedge \textbf{recipient}(e, \textbf{mary}) \wedge$
$\Box_\rho \exists s(\textbf{cause}(e,s) \wedge \textbf{know}(s) \wedge \textbf{theme}(s, \textbf{the-basics-of-med.}) \wedge$
$\textbf{holder}(s, \textbf{mary}))$

d. Cette expérience[Voice$_c$[enseigner à Marie les rudiments de la méd.]] $\rightsquigarrow$
$\lambda e.\textbf{cause}(\textbf{this-experience}, e) \wedge \textbf{teach}(e) \wedge \textbf{theme}(e, \textbf{the-basics-of-med.}) \wedge$
$\textbf{recipient}(e, \textbf{mary}) \wedge \Box_\rho \exists s(\textbf{cause}(e,s) \wedge \textbf{know}(s) \wedge$
$\textbf{theme}(s, \textbf{the-basics-of-med.}) \wedge \textbf{holder}(s, \textbf{mary}))$

In the default interpretation of (56a), the experience referred to by the subject is *not* identified with a teaching event introduced by the VP; rather, the teaching event is fleshed out by a *learning* event in the theme's referent, itself being caused by the experience. The change cannot be denied in the subsequent clause, precisely because the teaching event e quantified over by the tense/aspect marker *is* the learning event.

The arguments used in section 5 support the proposal (55), too. Let us first compare the interpretation of *in*-adverbial in agentive vs. non-agentive defeasible causative statements, see (57)-(58).

(57) FRENCH

a. Dr Li **m'a** **soigné** en dix minutes, mais j'ai eu besoin d'une
dr Li me=has treated in ten minutes but I=need.PFV.1SG of one

semaine pour guérir.
week to recover

'Dr. Li treated me in ten minutes, but I needed a week to recover.'

b. La voir sourire m'a **soigné** en dix minutes, #mais
her see smile me=has treated in ten minutes but

j'ai eu besoin d'une semaine pour guérir.
I=need.PFV.1SG of one week to recover

Intended: 'Seeing her smiling cured me in ten minutes, but I needed a week to recover.'

(58) FRENCH

    a. Pierre lui **a expliqué** le problème en deux minutes, mais
       Pierre him explain.PFV.3SG the problem in two minutes but

       elle a eu besoin d'une heure pour le comprendre.
       she need.PFV.3SG of an hour to it understand

       'Peter explained the problem to her in two minutes, but she needed an
       hour to understand it.'

    b. Le comportement de sa mère lui **a expliqué** le problème
       the behavior of her mother him explain.PFV.3SG the problem

       en moins d'une minute, #mais elle a eu besoin d'une heure pour
       in less of a minute but she need.PFV.3SG of an hour to

       le comprendre.
       it understand

       Intended: 'Her mother's behavior explained the problem to her in less
       than a minute, but she needed an hour to understand it.'

In the (a)-examples, what is measured by the *in*-adverbial is the time interval between the onset and the telos of the action performed by the subject's referent, while in the (b)-examples, it measures the time interval between the onset of the change in the theme's referent and the onset of the ensuing result state. This explains for the difference in the felicity of the second clause. In the (b)-examples, the event v denoted by the subject may very well have culminated while the causing event e introduced by the VP starts. This is another indication that v is not identical with e; see also (59):

(59) FRENCH
    Le traitement d'hier l'**a soigné** aujourd'hui.
    The treatment of yesterday him.treat.PFV.3SG today.

    'Yesterday's treatment cured him today.'

Let us now look at the interpretation of *begin*-statements:

(60) FRENCH

    a. Pierre a commencé à **enseigner** le russe à Marie.
       Pierre start.PFV.3SG to teach the Russian to Marie

       'Pierre started to teach Russian to Mary.'

b. Ce séjour linguistique a commencé à **enseigner** le russe à
   this stay linguistic start.PFV.3SG to teach the Russian to

   Marie.
   Marie

   'This linguistic stay started teaching Russian to Mary.'

(61) a. Peter started **to show** them the problem.
     b. These results started **to show** them the problem.

While (60a)/(61a) require the subject's referent started acting in such or such way, the (60b)/(61b) strongly suggest that the theme's referent to start changing in the direction of a *P*-state (e.g., start learning Russian in the case of (60b)). And note that the showing- or teaching-change may start well after the eventuality reported by the subject has started. For instance, perhaps Mary had to get used to her new environment one week long before starting learning any Russian.

Comparing progressive sentences with defeasible causatives used agentively vs. non-agentively point to the same conclusion:

(62) a. Jean est en train de lui **expliquer** toute la vérité.
     Jean is PROG him explain whole the truth

     'John is explaining the whole truth to her.'

     b. Ce qui s'est passé hier est en train de lui
     what REFL=happen.PFV.3SG yesterday is PROG him

     expliquer toute la vérité.
     explain whole the truth

     'What happened yesterday is explaining the whole truth to her.'

Sentence (62a) only requires an action to be ongoing (the explaining event type is instantiated in the model by actions of the subject's referent), while (62b) describes a change taking place in the theme's referent (the explaining event type is fleshed out in the model by the theme's changes-of-state). That the (b)-sentence is not contradictory again indicates that the eventuality v denoted by the subject does not have to be identical with the ongoing event e introduced by the VP, since it is made explicit that v and e have different spatio-temporal boundaries.

In summary, defeasible causative VPs have exactly the same semantics both with agents and causers, but the very same event type is tokenized differently when the VP combines with Voice$_c$ vs. Voice$_{ag}$: when used non-agentively, the event satisfying the encoded manner predicate is 'fleshed out' by a change-of-state rather than an action. This is perhaps at the source of the feeling that under this latter use, defeasible causatives are result verbs in a manner disguise.

7   Accounting for the cross-linguistic difference

In section 2, I reported that the change inference of causatives licensing the zero-change reading when used agentively is stronger in the case of Mandarin run-of-the-mill (non-modal) causative verbs than in the case of French, German or English defeasible causatives. This section aims to account for this difference, to my knowledge not observed before.

The zero-change/failed-attempt use of standard (non-modal) causative VP obtains through outer aspect in languages such as Mandarin. To obtain this reading, two pragmatic steps must be fulfilled. Firstly, the culmination inference which is by default triggered by the perfective must obviously be cancelled. For on its default interpretation, the first clause of a sentence such as (2) repeated below implies that the door *is* closed, differently from its imperfective (progressive) counterpart.

(2)   Lùlu **guān-le**   nèi-shàn mén   (dàn gēnběn méi   guān-shàng).
      Lulu close-PFV that-CL   door but   at-all   NEG.PFV close-up

      'Lulu closed that door (but it didn't get closed at all).'

The second clause of (2) cancels this inference; see Gyarmathy & Altshuler forthcoming and references therein, and Martin et al. (2018b) for the culmination inference of the Mandarin perfective in particular. Gyarmathy & Altshuler have argued that the culmination inference of perfective accomplishment sentences in languages such as Hindi amounts to an *abductive* inference. And interestingly, the *inhibition* of abductive inferences has been shown to require extra-effort, while in the case of other defeasible inferences such as scalar implicatures triggered by items such as *some*, the *calculation* of the inference generates extra-cost, see Noveck et al. (2011). Secondly, zero-change readings of standard causatives require to conceive the causing event as having as its initial part an act of the subject's referent which is *still* causally inert, while *already* being a part of a VP-event. But this is not trivial; in fact, it is often out of the blue challenging to find a context where an act fragment is already a part of a VP-event while still being causally inert. On this respect, it is interesting to note that some native speakers of Mandarin seem to find the zero-result reading of (2) at first sight very marked, but then accept it in a second phase, imagining a scenario where an obstacle prevents the closing of the door. I propose that these speakers struggle to retrieve a context such that an agentive closing event has a causally inert initial part.

In fact, assuming that a causing event has started without an ensuing change to have started too is challenging in a default context in languages such as English or French as well (remember the results of the second survey reported in section 5.4.1). Compare for instance the examples below, which are perfective statements containing an inchoative aspectual verb embedding a causative VP.

(63) a. John started to **burn** the book, #but it hasn't started burning yet.
      b. John started to **burn** the book, but it's so humid, it may take a lot of time before it really starts burning!

(64) a. John started to **open** the door, #but it hasn't started to open yet.
      b. John started to **open** the safe, but the code is so complicated, it might really take long!

In conclusion, obtaining the zero-change reading of standard causatives via a partitive perfective morphology generates some costs, namely (i) the cancellation of culmination inference obtained *via* abductive reasoning and (ii) the identification of a causally inert proper part of a vp-event.

In contrast, none of these two steps are required to obtain the zero-change use of defeasible causatives. Firstly, there is no need to cancel the inference of culmination triggered by perfective sentences, since even on this use, the event denoted by the vp *does* culminate with regard to the predicate. Recall for instance from section 3.2. the observation that the sentence (25) repeated below is in fact false if the reported event is not a *complete* teaching-the-basics-of-Russian event, and this even on a zero-change construal. As a result, (65) is contradictory.

(25) Ivan taught the basic material to the students in three weeks, but they still don't know anything.

(65) Ivan taught the basic material to the students in three weeks, #but he didn't finish.

Secondly, differently from what happens in the case of the zero-change construal of the Mandarin counterpart of *open the door*, no special context is required to identify a non-efficacious part of the causing event *e*. In fact, events denoted by defeasible causatives *are complete while causally inert*, in striking contrast with events denoted by standard causatives.

8   Why the change inference is sometimes defeasible even with causer subjects

The previous sections aimed to explain why, across languages, zero-change readings of causative predicates tend to require the external argument to be associated with the agent rather than the causer role. However, exceptions to this generalization have been observed here and there, and this section aims to explain them. I first summarize the relevant observations.

Firstly, for Mandarin, Liu (2018) reports that in a zero-change situation, 7 of the 30 adult speakers she tested *occasionally* accepted as true perfective statements

with some of the causative svs she tested *even when used with a causer subject.* Secondly, for French, the first survey reported in section 2.2. reveals that 6 out of the 19 subjects tested tend to accept sentences where the change is explicitly denied in a second clause *even with a causer subject* (3 out of 19 rated a sentence such as (11) with 3 on a [0-5] scale, and 3 with 5 on the same scale). Thirdly, for French and German, Martin & Schäfer 2012 have argued that adverbials *clearly* and *objectively* help to enhance the zero-change interpretation of defeasible causatives used non-agentively. For instance, (66) below sounds less contradictory than its counterpart without the adverbials.

(66) FRENCH, Martin & Schäfer (2012)
Ce   voyage leur a   clairement et   objectivement enseigné un peu
this trip   them has clearly   and objectively   taught   a   little

de russe,   tout de même! Il faut vraiment qu'ils   soient   idiots
of russian, though!   It must really   that they besUBJ.3PL stupid

pour qu'ils   n'aient   rien   appris.
for   that they NEG-have.SUBJ.3PL nothing   learned

'This trip clearly and objectively taught them a little bit of Russian though! They really must be idiots for not having learned anything.'

I aim to argue that what is happening in this case is that the relation R encoded by Voice$_c$ as defined in (34) repeated below is interpreted as the overlap relation, rather than the cause relation, as the case by default.

(34) a. Voice$_c \rightsquigarrow \lambda P \lambda v \lambda e.\textbf{event}(v) \vee \textbf{state}(v) \wedge R(v,e) \wedge P(e)$
      b. $R = \textbf{cause} \vee \circ$

Under this marked interpretation of R, the eventuality v denoted by the causer subject can be identified with the causing event e denoted by the vp. I argue that in sentences such as (66), the adverbials *clearly* and *objectively* invite to identify v as a vp-event e, by specifying that v clearly/objectively fulfills the property of a vp- (here teaching) event e. In that case, v is the event tokenizing the event type $\lambda e...P(e)...$ denoted by the vp. But in this interpretation, the event type denoted by the vp is crucially *not* understood as instantiated by a change-of-state of the theme's referent! As a consequence, a change-of-state can be denied in the subsequent cause. So for instance, in (66), the demonstrations denoted by the subject are *not* interpreted as *causing* the teaching event. Rather, *objectively/ clearly* indicates to the interpreter that the demonstrations *are* the described teaching-how-to-iron-sheet event.

9   Conclusion

Although this paper mostly looks at Mandarin, French and English data, it leads to testable predictions for other languages. In particular, we expect the zero-change reading to be less challenging with defeasible causatives than with standard causatives *via* weak perfectivity (see section 7). So if it turns out that weak perfective languages such as Mandarin have defeasible causatives, those verbs should license the zero-change use much more easily than standard causatives. Martin et al. (2018a) argue that *xiū* 'fix/repair' might be such a verb, and interestingly, in a perfective sentence, it does not entail that the targeted result state is obtained even in presence of an *in*-adverbial, just like what is observed with defeasible causative verbs (recall (25)).

Korean is an interesting language to test on this respect. If the Korean aspectual marker *-ess-* is a weak perfective similar in meaning to the Mandarin perfective *le*, and if Korean causative predicates licensing zero-change uses are standard (non-modal) causative predicates, we expect this reading to raise difficulties and to obtain more easily in facilitating contexts, where, for instance, something blocked the door while the agent had been trying to close it (as Liu 2018 and Martin et al. 2018a observe for Mandarin). If, on the contrary, the past morphology *-ess-* requires event completion with eventive predicates like the standard perfective does, and the causative predicates with failed-attempt uses encode a modal operator responsible for this reading (Beavers & Lee forthcoming), we expect failed-attempt uses to be much easier to accept, as observed for French or English.

It may also be, however, that within the same language, speakers vary in the semantics they attribute to some predicates. Verbs such as *teach* and *explain* seem rather uniformly interpreted as non-standard causatives in English or French, but other verbs, such as French *réparer* 'repair/fix' or English *mend/repair*, seem to give rise to less homogeneous judgments; some speakers (e.g., Ryle 1949) consider that *mend/repair* can be used to describe unsuccessful attempts, while for others, a repairing event is by definition successful. So if the Korean marker *-ess-* turns out to be a completive marker with eventive predicates and if the failed-attempt use of Korean causative predicates reveals to be challenging for a significant set of speakers, we could deal with a variation in the semantics speakers attribute to the predicates at hand (as standard vs. defeasible causatives). Such inter-speaker variation is to be more expected when the sublexical operator is not spelled-out by an overt morpheme (like it is in Salish languages, for instance; Jacobs 2011 a.o).

The analysis developed in the paper leaves some questions unanswered. In particular, I have argued that the relation R encoded by Voice$_c$ between the eventuality v denoted by the subject and the vp-event is preferably interpreted as the causal relation (rather the relation of overlap), and provided arguments in favour of this

claim. But *why* the relation R encoded by Voice$_c$ should be preferrably interpreted as a causal relation is another question.

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