

Causalness and the encoding of the causative-anticausative alternation in French and Spanish

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Abstract

In French and Spanish, both parts of the causative-anticausative alternation can be formally encoded in two ways: depending on the form of the verb, marked and unmarked causatives and marked and unmarked anticausatives can be distinguished. The goal of this paper is to verify whether causalness is a factor in the encoding and whether the two languages differ in this respect (Verbs used more often as causatives than as anticausatives have a high degree of causalness, while verbs used more often as anticausatives than as causatives have a low degree of causalness). On the basis of a corpus study of 20 French and 20 Spanish verbs, it will be shown that in both languages a strong correlation between causalness and encoding exists. A high degree of causalness increases the likelihood that a verb's anticausative is marked and the causative is unmarked, and a low degree of causalness increases the likelihood that a verb's anticausative is unmarked and the causative is marked.

1. INTRODUCTION

In past decades, the causative-anticausative alternation (CAA), as in (1), has been the focus of many studies in various subfields of linguistics, such as linguistic typology (see Nedyalkov & Silnitsky 1973, Haspelmath 1987, 1993, Haspelmath et al. in print, Kulikov 2003, Nichols et al. 2004, Comrie 2006), theoretical linguistics (see Labelle 1992, Labelle & Doron 2010, Levin & Rappaport Hovav 1995, Piñón 2001, Härtl 2003, Alexiadou et al. 2006, Alexiadou 2010, 2014, Kallulli 2006, Koontz-Garboden 2007, 2009, Schäfer 2008), and language-specific descriptive works (see for French: Rothemberg 1974, Zribi-Hertz 1987, Labelle 1992, Ben Salah-Tlili 2007, Kupferman 2008, Heidinger 2010, 2012, Kailuweit 2011, 2012, Legendre & Smolensky 2010 amongst others).

- | | | |
|-----|---------------------------|---------------|
| (1) | (a) John broke the glass. | causative |
| | (b) The glass broke. | anticausative |

Based on their syntactic and semantic properties the two parts of the alternation, the causative alternant and the anticausative alternant, can be characterized as follows (see (2)): The causative alternant describes a change of state and both the ACTOR that brings about and the UNDERGOER that undergoes the change of state are expressed as arguments; the ACTOR is expressed as a subject, while the UNDERGOER is expressed as a direct object. The anticausative alternant also describes a change of state, but does not express or semantically imply an ACTOR that brings about the event; the sole argument, namely the UNDERGOER, is expressed in subject position.¹

- (2) (a) John broke the glass. causative
 subject verb direct object
 ACTOR EVENT UNDERGOER
- (b) The glass broke. anticausative
 subject verb
 UNDERGOER EVENT

The terms ENCODING or ENCODING OF THE ALTERNATION, as in the title, refer to the form of the alternating verb. In the English examples in (1), the change between the causative and the anticausative alternant does not result in a formal change in the verb. Cross-linguistically, however, the CAA is often encoded in ways that involve a formal change in the alternating verb. In his typological work, Haspelmath (1993) distinguishes five types of encoding of the CAA: 1) the causative type where the causative alternant is formally marked compared to the anticausative alternant (exemplified by Georgian in Table 1), 2) the anticausative type where the anticausative alternant is formally marked compared to the causative (as in the Polish example), 3) the labile type where no formal change in the verb occurs (as in (1) above), 4) the equipollent type where both the causative and the anticausative alternant bear special morphology that is attached to a common stem (as in the Japanese example), 5) the suppletive type where the causative and the anticausative alternant are expressed by verbs which are formally not related.

	Type	Example
1	Marked causative	Georgian: <i>duγ-s</i> ‘cook (intransitive)’ <i>a-duγ-eb-s</i> ‘cook (transitive)’
2	Marked anticausative	Polish: <i>złamać-się</i> ‘break (intransitive)’ <i>złamać</i> ‘break (transitive)’
3	Labile	English: <i>break</i> ‘break (intransitive)’ <i>break</i> ‘break (transitive)’
4	Equipollent	Japanese: <i>atum-aru</i> ‘gather (intransitive)’ <i>atum-eru</i> ‘gather (transitive)’
5	Suppletive	Russian: <i>goret’</i> ‘burn (intransitive)’ <i>žeč</i> ‘burn (transitive)’

Table 1

Encoding types of the causative–anticausative alternation (Haspelmath 1993, adapted)

Besides cross-linguistic variation, the CAA also often involves variation within a single language, as is the case for French and Spanish. In both languages, the causative and the anticausative alternant come in two variants: a formally marked and a formally unmarked variant (see Table 2).²

	Unmarked	Marked
Causative	verb	<i>faire/hacer</i> ‘make’+verb
Anticausative	verb	<i>se</i> +verb

Table 2

Encoding of the causative–anticausative alternation in French and Spanish

As for the causative alternant, the unmarked variant is formed with a plain transitive verb (as in (3a)), while the marked variant is formed with the lexical verb and a causative auxiliary (fr. *faire* ‘make’ as in (3b) and sp. *hacer* ‘make’).

(3) *Causative* (example verb fr. *grossir* ‘make/become big’)

(a) *Unmarked causative* (=uC)

C’ est seulement dans le film... ça **grossit** beaucoup les choses!

it is only in the film this amplifies a.lot the things

‘It’s only in the film ... this amplifies things a lot.’

(Simonin, TOUCHEZ PAS AU GRISBI!, 1953; Frantext; modified)

(b) *Marked causative* (=mC): *faire* + verb

[...] les goûters formidables qui **faisaient** un peu **grossir** [...]

the snacks very.good that made a bit put.on.weight

Pandora et Vanessa.

P. and V.

‘The great snacks that made Pandora and Vanessa gain weight.’

(Ormesson, TOUS LES HOMMES SONT FOUS, 1986; Frantext; modified)

In the case of the anticausative, the unmarked variant is formed with a plain intransitive verb (as in (4a)) and the marked variant is formed both in French and Spanish with the lexical verb and the reflexive clitic *se* (as in (4b)).

(4) *Anticausative* (example verb fr. *casser* ‘break’)

(a) *Unmarked anticausative* (=uAC)

Un lacet **casse** [...]

one lace breaks

(Genevoix, CEUX DE 14, 1950; Frantext; modified)

(b) *Marked anticausative* (=mAC): *se*+verb

[...] il serrait son verre dans sa main, le verre **se casse**.

he squeezed his glass in his hand the glass REFL breaks

‘He squeezed his glass in his hand and the glass breaks.’

(Anouilh, LA REPETITION OU L’AMOUR PUNI, 1950;

Frantext; modified)

The existence of these four types of encoding within a single language raises several research questions about the distribution of verbs in the four types and about the semantic and syntactic differences between the marked and the unmarked variant of an alternant (see Schäfer 2009 for a recent survey of the literature and the issues treated there).³ The specific research question that will be answered in the present paper is whether the CAUSALNESS of the verb, i.e. the quantitative relation between the causative and the anticausative use, is a factor in the encoding and whether French and Spanish differ in this respect. Thereby the paper contributes in at least two ways to the study of the causative-anticausative alternation.

– The systematic consideration of causalness is a very recent development in the study of the alternation, and so far very little empirical work has been conducted in this domain (see Heidinger 2012, Samardžić & Merlo 2012, Haspelmath et al. in print). The present study contributes to this new line of research. It shows for two more languages that a relation exists between causalness and the encoding of the alternation. Further, it differs from Samardžić & Merlo (2012) and in that causalness is linked to the encoding of specific verbs in specific languages (see Section 2 for more on this difference). Finally, an alternative to Haspelmath's (2006, 2008) and Haspelmath et al.'s (in print) view on the causal relation between causalness and encoding is discussed.

– The present study also makes an innovative contribution to the research on the causative-anticausative alternation in French and Spanish. In both languages the alternation has been extensively studied, but so far primarily from the perspective of the relation between verb semantics and encoding. Taking into account causalness, which

has been neglected so far in the both languages, adds a relevant factor to this debate. In Section 4 I will briefly discuss how this may open new perspectives for semantically oriented research on the alternation.

The choice of these two languages is motivated by several reasons: first, French and Spanish are both languages with a variation in the encoding of the alternants (marked vs. unmarked variants, see Table 2), which is a prerequisite for verifying a prediction on the relation between causalness and encoding. Second, while the alternation in these two languages has received considerable attention in the linguistic literature, the inclusion of the factor *causalness* is an innovation in this ongoing debate. Finally, French and Spanish are closely related languages and show the same encoding types (marked anticausatives with *se*; marked causatives with a causative auxiliary); it is thus interesting to investigate whether the similarities between the two languages include the relation between causalness and encoding.

The paper is structured as follows. In Section 2, the concept of causalness and its presumed relevance for the encoding of the alternation will be introduced, ways in which the notion can be fruitfully used in the analysis of the alternation will be discussed and a specific prediction concerning the relation between causalness and the encoding of the CAA will be formulated. Section 3 is the empirical core of this paper and devoted to a corpus study of alternating verbs in which the prediction is tested against French and Spanish data. The main outcome is that there is in fact a strong correlation between causalness and encoding in both languages.

2. CAUSALNESS AND ENCODING

Alternating verbs may differ with respect to how often they are used as a causative and as an anticausative. The French alternating verb *améliorer* ‘improve’, for example, is used much more often as a causative than as an anticausative, while the verb *grandir* ‘make/become big’ is used much more often as an anticausative than as a causative (see Table 3).

	Causative	Anticausative
<i>améliorer</i> ‘improve’	79.66%	20.34%
<i>grandir</i> ‘make/become big’	5.39%	94.61%

Table 3

Frequency of causative and anticausative use for French *améliorer* and *grandir* (Corpus source: see Section 3.1)

Following Haspelmath et al. in print, I use the term *causalness* to refer to the dimension that distinguishes *améliorer* and *grandir*. The degree of causalness of an alternating verb is calculated as in (5): the number of the causative uses of a verb multiplied by 100 is divided by the sum of its causative and anticausative uses. The number of causative uses of a verb is the sum of its unmarked and its marked causative uses; the number of its anticausative uses is the sum of its unmarked and its marked anticausative uses.⁴ Verbs that are used more often as causatives (compared to anticausatives) have a high degree of causalness, while verbs that are used more often as anticausatives (compared to causatives) have a low degree of causalness. The causalness value, which is a value between 0 and 100, is 79.66 for the verb *améliorer* and 5.39 for the verb *grandir*.

$$(\text{causative uses} \times 100)$$

(5) Causalness value: _____

$$(\text{causative uses} + \text{anticausative uses})$$

In this paper, the prediction in (6) on the relation between causalness and the encoding of the causative alternant and the relation between casualness and the anticausative alternant is tested. The basic expectation is a covariation between the variables causalness and encoding. It is expected that the encodings of the two alternants covary with causalness in two different ways: firstly, for the encoding of the anticausative, a positive correlation between causalness and marked anticausatives is predicted; secondly, for the encoding of the causative alternant, a negative correlation between causalness and marked causatives is predicted.⁵ According to this prediction, a high degree of causalness increases the likelihood that the anticausative is marked and the causative is unmarked, and a low degree of causalness increases the likelihood that the anticausative is unmarked and the causative is marked.⁶

(6) Prediction

(a) Causalness & Encoding of anticausative:

A positive correlation exists between causalness and the percentage of marked (as opposed to unmarked) anticausatives.

(b) Causalness & Encoding of causative:

A negative correlation exists between causalness and the percentage of marked (as opposed to unmarked) causatives.

To illustrate the prediction, I use again the French verbs *améliorer* and *grandir*. Recall that *améliorer* has a higher degree of causalness than *grandir* (79.66 vs. 5.39). Thus, *améliorer* should mark the anticausative equally or more often and the causative equally

or less often than *grandir*. As the encodings of the two verbs in Table 4 and 5 show, the prediction is borne out: *améliorer* marks the anticausative more often than *grandir* (100% > 0%) and *améliorer* marks the causative less often than *grandir* (8.93% < 18.75%).

	Unmarked	Marked
Anticausative	0% (=améliorer)	100% (=s'améliorer)
Causative	100% (=améliorer)	0% (=faire améliorer)

Table 4
Encoding of *améliorer*

	Unmarked	Marked
Anticausative	100% (=grandir)	0% (=se grandir)
Causative	81.25% (=grandir)	18.75% (=faire grandir)

Table 5
Encoding of *grandir*

In order to test the prediction against a larger set of verbs a statistical method is needed. To verify the extent to which the prediction is fulfilled by the French and Spanish data Spearman's rank correlation coefficient is calculated for the encoding of the causative and the anticausative in both languages. In the case of the encoding of the anticausative, the degree of causalness and the percentage of marked anticausatives are set in relation (predicting a positive correlation). For the encoding of the causative, the causalness and the percentage of the marked causatives are set in relation (predicting a negative correlation).

Given the above definition of causalness, the prediction only relates a verb's frequency of use in the causative and the anticausative alternant and the encoding of the alternants. It does not relate (lexical) semantic properties of the verbs and the encoding

of these verbs in the causative-anticausative alternation. Note however that in the literature, several statements of the latter type have been made. More precisely, the spontaneity of a verb (i.e. the probability of the event denoted by the verb occurring with or without an external force) has been considered as a factor for the encoding of the alternation. Nedjalkov (1969) argues that the more spontaneous an event is, the more probable is its expression with a marked causative (Nedjalkov 1969; cited after Letuchiy 2010: 239). The same basic idea, but from a different perspective, can be found in Croft (1990) and Haspelmath (1993):

[...] the more typically the change of state requires an external agent, the more likely the causative type will be unmarked.

(Croft 1990: 60)

[...] a factor favoring the anticausative expression type [= marked anticausative & unmarked causative] is the probability of an outside force bringing about the event. Conversely, the causative expression type [= marked causative & unmarked anticausative] is favored if the event is quite likely to happen even if no outside force is present [...]

(Haspelmath 1993: 103; modified)

The difficulty that these approaches face is that a verb's spontaneity is hardly accessible; in this respect spontaneity differs from other lexical semantic properties of verbs such as *aktionsart*, which can be determined based on a number of well-established diagnostics. The prediction to be tested in the present paper (see (6)) is thus

more modest in that it does not refer to the verb's semantics, but it is also less speculative since it focuses on the directly observable facts.

The concept of causalness has recently been applied in two empirical works on the causative-anticausative alternation: Haspelmath et al. (in print) and Samardžić & Merlo (2012). Haspelmath et al. (in print) test several predictions on the relation between causalness and CAUSATIVE PROMINENCE (i.e. the tendency to formally mark the causative alternant and leave the anticausative alternant unmarked) for 20 verb meanings in seven languages.⁷ One of the main results of their corpus-based study is that there is a strong negative correlation between causalness and causative prominence: verb meanings with a high degree of causative prominence (i.e. they cross-linguistically tend to be encoded with marked causatives) tend to have a low degree of causalness and verb meanings with a low degree of causative prominence tend to have a high degree of causalness. For example, in Haspelmath et al.'s (in print) sample of 20 verb meanings, 'sink' is the one with the highest degree of causative prominence and has a causalness value of 17 (across all seven languages), while 'close' has the lowest degree of causative prominence and a causalness value of 80. The same method as in Haspelmath et al. (in print) has already been applied in Samardžić & Merlo (2012) – with the important difference that Samardžić & Merlo (2012) use all 31 verb meanings from Haspelmath (1993), but only apply it to English. Samardžić & Merlo (2012) show that a strong negative correlation ($r = 0.84$, $p < 0.01$; with one outlier removed) exists between the causalness of the English verbs and the causative prominence of the verb meanings (based on Haspelmath's 1993 data). English verbs with meanings which cross-linguistically tend to be encoded with a marked causative tend to have a lower degree of

causalness than English verbs with meanings which cross-linguistically tend not to be encoded with a marked causative.⁸

In the present paper, the same notion of causalness as in Haspelmath et al. (in print) and Samardžić & Merlo (2012) is applied: causalness is reflected in the frequency of the causative and the anticausative use of a verb. In the present paper, however, causalness is related to the frequency of formal encodings of individual verbs in individual languages – unlike as in Haspelmath et al. (in print) and Samardžić & Merlo (2012). One novelty of the present contribution is thus that it relates causalness to the frequency of marked and unmarked variants of the alternants. Another novelty is that French and Spanish are two languages which so far have not been investigated with respect to the relation between causalness and encoding. Finally, the presentation of the results in Section 3 includes a detailed comparison of the two languages with respect to the relation between causalness and encoding; such a comparison is neither part of Samardžić & Merlo's (2012) analysis of English (due to the fact that only one language is investigated) nor of Haspelmath et al.'s (in print) study (probably due to large number of investigated languages).

To sum up, causalness has been defined in this section as a property of verbs which is based on how often a verb appears in the causative and the anticausative part of the alternation. Further, a specific prediction on the relation between causalness and the encoding of the alternation has been formulated. Finally, two recent applications of the notion of causalness have been briefly presented and the difference between these existing applications and that in the present contribution has been described.

3. EMPIRICAL STUDY

3.1 *Material and method*

To test the prediction that there is a correlation between the causalness and the encoding of alternating verbs (as defined in (6), Section 2) the following 20 alternating French and 20 alternating Spanish verbs were analyzed:

(7) Set of French verbs:

améliorer ‘improve’, *assécher* ‘dry’, *attrister* ‘make/become sad’, *augmenter* ‘increase’, *briser* ‘break’, *casser* ‘break’, *diminuer* ‘decrease’, *élargir* ‘enlarge’, *endurcir* ‘make/become hard’, *fermer* ‘close’ *gonfler* ‘inflate/swell’, *grandir* ‘make/become big’, *grossir* ‘make/become big’, *intensifier* ‘intensify’, *jaunir* ‘make/become yellow’, *maigrir* ‘make/become thin’, *mollir* ‘make/become soft’, *multiplier* ‘multiply’, *ouvrir* ‘open’ *refroidir* ‘cool down’

(8) Set of Spanish verbs:

ablandar ‘make/become soft’, *abrir* ‘open’, *adelgazar* ‘make/become slim’, *agrandar* ‘make/become bigger’, *amarillear* ‘make/become yellow (pale), *aumentar* ‘increase’, *cerrar* ‘close’, *congelar* ‘freeze’, *crecer* ‘grow’, *derrumbar* ‘collapse’, *disminuir* ‘decrease’, *endurecer* ‘make/become hard’, *engordar* ‘make/become fat’, *enrojecer* ‘make/become red’, *ensanchar* ‘widen’, *hervir* ‘boil’, *intensificar* ‘intensify’, *mejorar* ‘improve’, *mojar* ‘make/become wet’, *multiplicar* ‘multiply’

In the preparation for this study, much attention has been paid to the compilation of these sets. As already stated in Section 2, the main goal of this study is to investigate the relation between causalness and encoding. Therefore, it is desirable to have sets

composed of verbs which vary both in causalness and encoding. Since causalness has not yet been investigated for the two languages, it could not be used for verb selection. Thus, the main idea behind the compilation of the two sets is that they show variation with reference to the encoding of the alternation. Based on statements from the literature, verbs, which presumably differ with respect to their encoding, have been selected. For example, the Spanish set includes verbs such as *crecer* ‘grow’, which forms unmarked anticausatives, but not unmarked causatives (according to Mendikoetxea (1999: 1597f.)). The set also includes verbs such as *ablandar* ‘make/become soft’ which forms marked anticausatives and unmarked causatives (according to Mendikoetxea (1999: 1589f.)).

The sets are also intended to cover the range of alternating verbs with respect to criteria such as morphological form (derived and underived verbs) or *aktionsart* (punctual and durative, telic and atelic verbs). Although the sets are too small in order to systematically control for morphological form and *aktionsart* as factors, i.e. to detect their impact on the encoding, it is nevertheless desirable to have variation in the sets with respect to these dimension. A further aim governing the selection of the verbs was to achieve concordance between the French and the Spanish set. In fact, 14 of the 20 verbs have a counterpart in the other language’s set. These “corresponding” verbs are listed in Table 6.

The main challenge in the actual compilation of the sets was that individual verbs always combine several of these criteria, e.g. French *casser* ‘break’ is both telic and underived; *assécher* ‘dry up’ is both telic and derived. The addition of a given verb to the sets does not only have consequences for one, but for several properties of the sets. Therefore, the overall balance within the sets always had to be considered during the

compilation of the sets. As a consequence it is not possible to give one decisive reason why a given verb has been added to a set.

French	Spanish	
<i>améliorer</i>	<i>mejorar</i>	‘improve’
<i>augmenter</i>	<i>aumentar</i>	‘increase’
<i>élargir</i>	<i>ensanchar</i>	‘enlarge’
<i>endurcir</i>	<i>endurecer</i>	‘make/become hard’
<i>grandir</i>	<i>agrandar</i>	‘make/become big’
<i>grossir</i>	<i>engordar</i>	‘make/become big’
<i>intensifier</i>	<i>intensificar</i>	‘intensify’
<i>jaunir</i>	<i>amarillear</i>	‘make/become yellow’
<i>mollir</i>	<i>ablandar</i>	‘make/become soft’
<i>multiplier</i>	<i>multiplicar</i>	‘multiply’
<i>ouvrir</i>	<i>abrir</i>	‘open’
<i>maigrir</i>	<i>adelgazar</i>	‘make/become thinner’
<i>fermer</i>	<i>cerrar</i>	‘close’
<i>diminuer</i>	<i>disminuir</i>	‘decrease’

Table 6
Corresponding verbs

The limitation to 20 verbs in each language has practical reasons, namely the fact that all relevant data had to be analyzed manually; in addition to the relevant data, much irrelevant data had to be examined in order to single out the relevant data. Details on coding decisions and on how irrelevant data has been singled out are given in Appendix A.

The French data, which has partly been used in Heidinger (2012), comes from the French text corpus *Frantext*, a corpus consisting mainly of literary texts from the 16th century onwards, but only data from 1950 to 2000 were considered. In cases of verbs where the corpus queries led to too many hits, only a selection of the hits was considered (the selection was randomized in the sense that it did not involve any of the factors to be analyzed in the study). The corpus queries were lemma based, i.e. they

were not specified for any grammatical form of the verb. For French, a total 3946 examples were analyzed. This number does not include the irrelevant examples that had to be sorted out manually. Only marked and unmarked causatives and anticausatives (as in (3) and (4)) were considered, while for example stative and eventive passives, marked causatives of marked anticausatives and absolute uses of transitive verbs were discarded.

The Spanish data comes from the text corpus *Corpus de Referencia del Español Actual* (CREA) which is a panhispanic text corpus with texts from 1975 onwards. In this study I did not search the whole corpus but only the subpart with novels from Spain (thus the Spanish data only is limited to Iberian Spanish). Since the corpus does not allow for lemmatized searches the queries had to be based on verb forms.⁹ For each verb, I searched the forms for all three persons, for singular and plural and for three different tenses in the indicative mood (present, simple perfective past (*indefinido*), simple imperfective past (*imperfecto*)). For Spanish, a total of 1859 examples were analyzed using the same criteria as in the selection of the French data.

3.2 Results

Tables 7 and 8 present the results of the corpus study. For each of the investigated verbs the tables indicate the causalness, the encoding of the anticausative alternant and the encoding of the causative alternant. The verbs are ordered with increasing causalness. To indicate the encoding of the two alternants, the percentage of the marked variant (as opposed to the unmarked variant) is given. The tables thus read as follows: the French verb *grandir* has a degree of causalness of 5.39; 0% of its anticausative uses are marked (and 100% are unmarked), and 18.75% of its causative uses are marked (and 81.25%

are unmarked). Tables with the underlying absolute frequencies are given in Appendix

B.

	Causalness	% mAC	% mC
<i>grandir</i>	5.39	0.00	18.75
<i>maigrir</i>	6.38	0.00	100.00
<i>mollir</i>	8.11	0.00	33.33
<i>jaunir</i>	26.39	0.00	0.00
<i>grossir</i>	27.82	1.56	18.92
<i>refroidir</i>	29.63	42.11	8.93
<i>diminuer</i>	41.88	0.00	2.50
<i>élargir</i>	48.76	100.00	0.00
<i>intensifier</i>	49.33	100.00	0.00
<i>augmenter</i>	50.57	4.20	4.10
<i>multiplier</i>	53.97	99.09	0.00
<i>attrister</i>	54.55	100.00	0.00
<i>gonfler</i>	56.00	69.70	3.57
<i>endurcir</i>	65.00	100.00	7.69
<i>briser</i>	69.44	97.27	0.00
<i>ouvrir</i>	71.03	100.00	0.00
<i>assécher</i>	73.33	100.00	0.00
<i>améliorer</i>	79.66	100.00	0.00
<i>casser</i>	84.08	58.49	1.43
<i>fermer</i>	90.16	91.67	0.00

Table 7

Causalness and encoding in French

	Causalness	% mAC	% mC
<i>crecer</i>	2.34	0.00	100.00
<i>derrumbar</i>	10.38	100.00	0.00
<i>hervir</i>	15.19	0.00	41.67
<i>enrojecer</i>	19.83	4.12	37.50
<i>amarillear</i>	20.83	0.00	0.00
<i>engordar</i>	30.61	2.94	13.33
<i>ablandar</i>	35.94	100.00	0.00
<i>endurecer</i>	37.68	97.67	0.00
<i>disminuir</i>	37.78	1.79	2.94
<i>adelgazar</i>	39.39	45.00	23.08
<i>intensificar</i>	39.39	100.00	0.00
<i>ensanchar</i>	40.30	100.00	0.00
<i>multiplicar</i>	42.45	100.00	1.69
<i>mejorar</i>	44.05	2.13	2.70
<i>aumentar</i>	44.65	1.14	7.04
<i>congelar</i>	48.39	100.00	0.00
<i>agrandar</i>	49.09	100.00	0.00
<i>abrir</i>	71.50	100.00	0.00
<i>cerrar</i>	84.69	100.00	0.00
<i>mojar</i>	85.42	100.00	0.00

Table 8
Causalness and encoding in Spanish

3.2.1 Encoding of the anticausative alternant

Beginning with the encoding of the anticausative in French, Table 7 presents for each of the 20 French verbs the causalness and the percentage of the marked anticausative (as opposed to the unmarked anticausative). The value in the second column of Table 7 indicates the causalness of the respective verb and the verbs are ordered with increasing causalness. The third column indicates the encoding of the anticausative alternant for that verb. Figure 1 represents the same data and each of the data points stands for one of the 20 verbs.

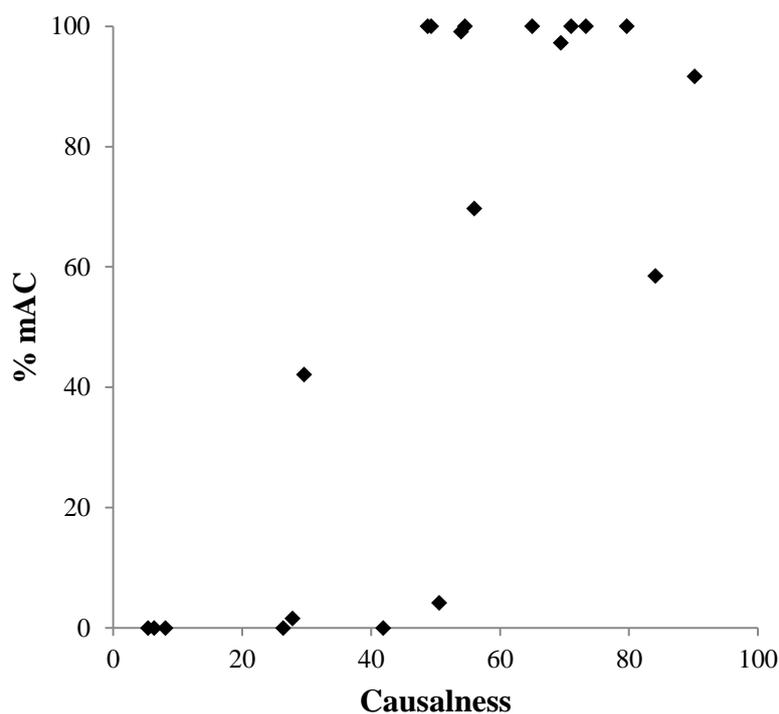


Figure 1
Causalsness and the encoding of the anticausative alternant in French

Taking all 20 French verbs together, the overall impression is that the encoding of the anticausative correlates with the causalsness: verbs with a low degree of causalsness (located towards the left end of the X-axis) tend to have unmarked anticausatives, while verbs with a higher degree of causalsness (located towards the right end) tend to have marked anticausatives. In order to analyze the overall correspondence of the French data with the prediction that causalsness and the percentage of marked anticausatives correlate, Spearman's rank correlation coefficient has been calculated. The coefficient amounts to 0.675 (level of significance = 0.01 (one-sided)), which indicates a strong correlation between causalsness and the encoding of the anticausative in French.

A further result that becomes immediately apparent by looking at Figure 1 is the strong preference of the verbs for only one of the two encoding variants: French

alternating verbs typically encode the anticausative either with the marked or with the unmarked variant.¹⁰ Examples for the first type of verb are *ouvrir*, *assécher*, *endurcir*, *intensifier*; examples for the second type are *grandir*, *maigrir*, *jaunir*. Note that only three out of 20 verbs show variable behavior in the sense that both variants have at least a percentage of 10%. These variable verbs are *refroidir* (42.11% marked and 57.89% unmarked) (see (9)), *gonfler* (69.70% marked and 30.30% unmarked) (see (10)) and *casser* (58.49% marked and 41.51% unmarked) (see (4)).

(9) (a) Le potage refroidissait.

the soup cooled.down

‘The soup cooled down.’

(Rheims, LES GRENIERS DE SIENNE, 1987; *Frantext*)

(b) L’ eau stagnante se refroidissait.

the water stagnant REFL cooled.down

‘The stagnant water cooled down.’

(Weyergans, MARCAIRE LE COPTE, 1981; *Frantext*)

(10) (a) Les pieds gonflèrent dans les bottes de cuir mal tanné.

the feet swelled inside the boots of leather badly tanned

‘The feet swelled inside the boots made of badly tanned leather.’

(Lanzmann, LA HORDE D’OR, 1994; *Frantext*)

(b) Je sentis mon cœur se gonfler [...]

I felt my heart REFL swell

‘I felt my heart swell.’

(Gracq, LE RIVAGE DES SYRTEs, 1951; Frantext)

Turning to the encoding of the anticausative in Spanish, the same values as for French are correlated: the causalness and the percentage of marked anticausatives. The respective values for the 20 Spanish verbs are given in Table 8 and represented in Figure 2.

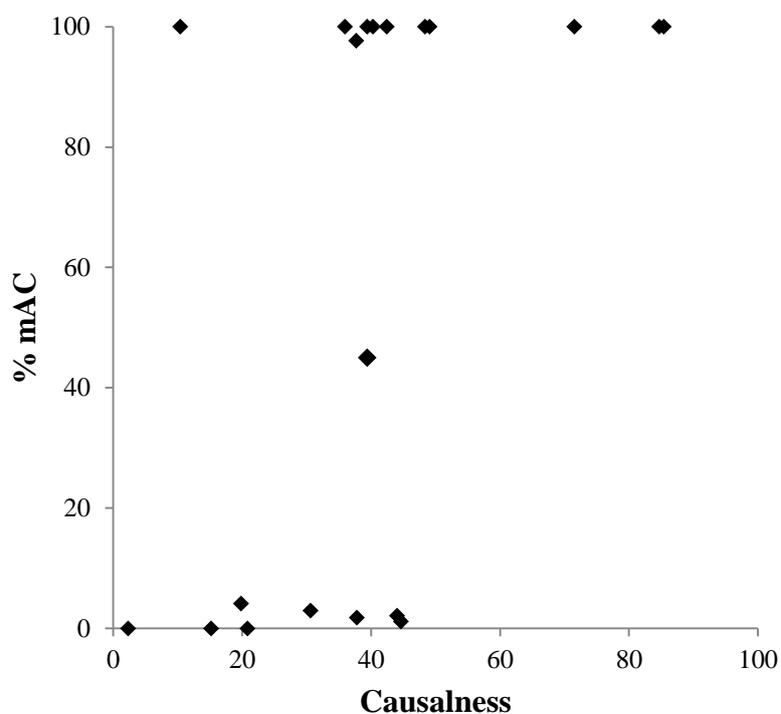


Figure 2
Causalness and the encoding of the anticausative alternant in Spanish

As in French, we observe a correlation between causalness and the encoding of the anticausative. As shown in Figure 2, the percentage of marked anticausatives tends to increase with the degree of causalness. The correlation coefficient which amounts to

0.540 (level of significance = 0.01 (one-sided)) confirms this impression and indicates a robust correlation between causalness and the encoding of the anticausative in Spanish. This correlation is due to the fact that verbs with a causalness value of 40 or higher tend to mark the anticausative and that verbs that do not mark the anticausative typically have a causalness value of below 40.

A further commonality with French, besides the robust correlation between causalness and encoding, is that Spanish alternating verbs also show a strong preference for only one of the encoding variants. Verbs that formally mark the anticausative are, for example, *congelar*, *agrandar* or *cerrar*; verbs that do not mark the anticausative are *crecer*, *amarillear*, *hervir*. Crucially, *adelgazar* is the only verb in the Spanish set where both variants have at least a percentage of 10% (with 45% marked and 55% unmarked).

Examples of marked and unmarked anticausatives with *adelgazar* are given in (11) and (12). In our data, a clear division of labor between the marked and the unmarked variant can be observed: while the unmarked variant is used for the expression of the meaning ‘to lose weight’ as in (11), i.e. the physical process of becoming thinner of an animate being, the marked anticausative is used in other types of events, which can be conceptualized as the becoming thinner of an entity: the diminishing of a whisper or a voice or the narrowing of a road into a trail (see (12)).

- (11) También mi madre languidecía, adelgazaba y se encontraba molesta.
 also my mother languished became.thinner and REFL found annoyed
 ‘also my mother languished, lost weight and found herself annoyed’
 (Salisachs, LA GANGRENA, 1976; CREA)

(12) (a) [...] el susurro todavía se adelgazó más [...]

the whisper still REFL became.thinner more

‘The whisper still diminished more.’

(Díez Rodríguez, EL EXPEDIENTE DEL NÁUFRAGO, 1992; CREA)

(b) [...] el camino se adelgazaba en un angosto sendero [...]

the road REFL became.thinner into a narrow trail

‘The road narrowed into a narrow trail.’

(Cercas, SOLDADOS DE SALAMINA, 2002; CREA)

(c) [...] la otra voz se adelgazaba en un hilo [...]

the other voice REFL became.thinner into a thread

‘The other voice diminished into a thread.’

(Gavilanes, EL BOSQUE PERDIDO, 2000; CREA)

In summary, both languages show a strong correlation between causalness and the encoding of the anticausative in terms of our prediction. Further, in both languages, verbs tend to encode the anticausative alternant either with the marked or with the unmarked variant.

3.2.2 *Encoding of the causative alternant*

In order to analyze the encoding of the causative, the causalness and the percentage of marked causatives are set in relation. As will become evident in the following, the encoding of the causative differs substantially in both languages from the encoding of the anticausative. Beginning with the situation in French, the causalness and the percentage of marked causatives given in Table 7 are represented in Figure 3.

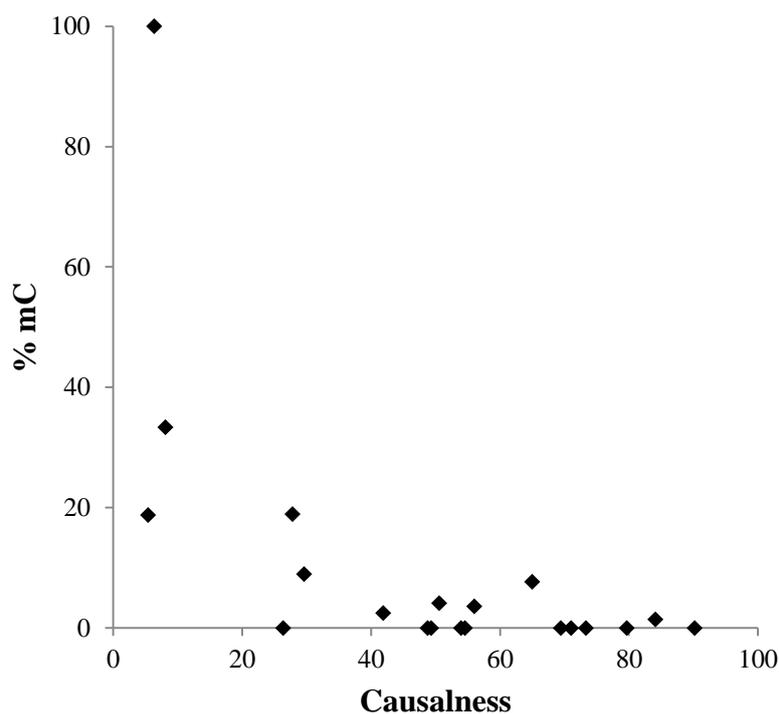


Figure 3
Causalsness and the encoding of the causative alternant in French

As Figure 3 shows, the encoding of the causative differs from the encoding of the anticausative in that the marked variant appears less often than in the case of the anticausative (as seen in Fig. 1). Even the verbs with a rather low degree of causalsness (located towards the left end of the X-axis) rarely formally mark the causative (the verb *maigrir* being the exception). Despite the low frequency of marked causatives, Figure 3 shows at first sight that there is a correlation between causalsness and the encoding of the causative. Crucially, there is a clear tendency for the percentage of marked causatives to increase with the decrease in causalsness. This impression is confirmed by the calculated correlation coefficient which amounts to -0.607 (level of significance = 0.01 (one-sided)).

French verbs that show variation in the encoding of the causative alternant are, for example, *grossir* (see (3)), *augmenter* (see (13)), *refroidir* (see (14)).

(13) (a) *unmarked causative*

[...]sa fierté augmenta son courage.

his pride increased his courage

‘His pride increased his courage.’

(Guehenno, JEAN-JACQUES, 1950; Frantext)

(b) *marked causative*

[...]une telle attitude faisait augmenter notoirement

a such attitude made increase notoriously

le montant de mes pourboires.

the sum of my tips

‘such an attitude made the sum of my tips increase notoriously’

(Salvayre, LA PUISSANCE DES MOUCHES, 1995; Frantext)

(14) (a) *unmarked causative*

Cette pause avait refroidi son corps.

this pause had cooled his body

‘This pause had cooled down his body.’

(Clavel, LES FRUITS DE L’HIVER, 1968; Frantext)

(b) *marked causative*

[...]pour faire refroidir le moteur [...]

to make cool.down the engine

‘...to make the engine cool down.’

(Mordillat, VIVE LA SOCIALE, 1981; Frantext)

The relevant values for the encoding of the causative in Spanish are given in Table 8 and illustrated in Figure 4. As in the case of French, marked causatives are less frequent than marked anticausatives. Only one of the verbs with a low degree of causalness, namely *crecer*, is formally marked in all causative uses. In the case of the other verbs with a low degree of causalness, the percentage of marked causatives is rather low. But despite the low frequency of marked causatives, we find, as in French, a robust correlation between causalness and the encoding of the causative alternant. The correlation coefficient is slightly lower than in French and amounts to -0.470 (level of significance = 0.05 (one-sided)).

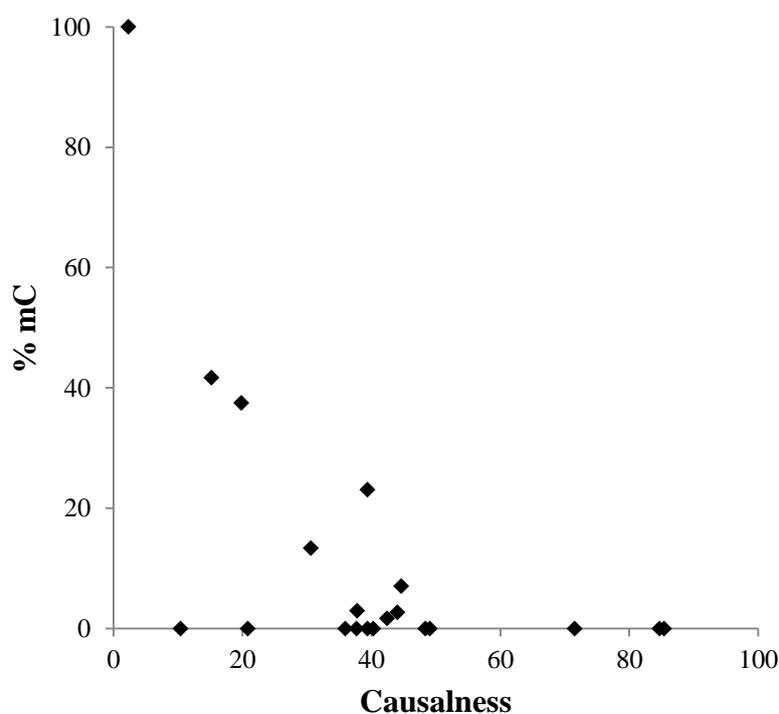


Figure 4

Causality and the encoding of the causative alternant in Spanish

Spanish verbs that show variation in the encoding of the causative alternant are, for example, *aumentar* (see (15)), *enrojecer* (see (16)), *adelgazar* and *engordar*.

(15) (a) *Unmarked causative*

Aquellas palabras aumentaron mi propio malestar.

those words increased my own discomfort

(Martín Gaité, NUBOSIDAD VARIABLE, 1994; CREA)

(b) *Marked causative*

[...] una creciente crisis que hacía aumentar el número

a growing crisis that made increase the number

de desocupados [...]

of unemployed

‘a growing crisis that made the number of unemployed people increase’

(Fajardo, LA EPOPEYA DE LOS LOCOS, 1990; CREA)

(16) (a) *Unmarked causative*

La sangre enrojecía progresivamente el agua.

the blood reddened progressively the water

(Zaragoza, CONCERTO GROSSO, 1981; CREA)

(b) *Marked causative*

[...] el silencio del acusado [...] hizo enrojecer a Caifás.

the silence of.the accused made redder P Caifás

‘The silence of the accused made Caifás blush.’

(Benítez, CABALLO DE TROYA, 1994; CREA)

To sum up, the encoding of the causative alternant is in correspondence with our prediction in both languages: verbs with a low degree of causalness tend to mark the causative alternant more often than verbs with a high degree of causalness. In addition to that we have seen that the encoding of the causative alternant differs in both languages from the anticausative: marked causatives are considerably less frequent than marked anticausatives.

3.3 Comparisons

In this section we look at the relation between causalness and encoding from a comparative perspective. We begin by taking another look at the correlation coefficients for both languages and for both parts of the alternation. Table 9 shows that in all four cases we observe a strong correlation between causalness and encoding.

	French	Spanish
Anticausative	0.675 (p < 0.01 (one-sided))	0.540 (p < 0.01 (one-sided))
Causative	-0.607 (p < 0.01 (one-sided))	-0.470 (p < 0.05 (one-sided))

Table 9

Correlation coefficients (Spearman’s rho) for causalness and marked encodings

As concerns the comparison between the two languages, Table 9 shows that the correlations are slightly stronger in French than in Spanish; but the differences are too small to be further interpreted. As concerns the comparison between the two parts of the alternation, the correlations are slightly stronger in the encoding of the anticausative

alternant; but again the differences between the correlation coefficients are too small to be further interpreted. The conclusion with respect to the correlation coefficients is thus that no relevant differences exist between the two languages and the two alternants.

Besides these commonalities, we also detect differences in the data: The first difference is one between the causative and the anticausative alternant. Both in French and in Spanish, marked anticausatives are considerably more frequent than marked causatives. While the anticausative alternant is nearly always formally marked if the verb has a high degree of causalness, the causative is only rarely formally marked even if the verb has a very low degree of causalness; there are many verbs with a low degree of causalness where the causative alternant is predominantly unmarked and not marked (e.g. *jaunir*, *refoirdir*, *grandir* in French and *derrumbar*, *amarillear*, *engordar* in Spanish).¹¹

The second difference concerns the encoding of the anticausative alternant in the two languages. In both languages the use of the marked and unmarked variant of the anticausative alternant depends on the degree of causalness of the respective verb. However, the cut-off point for the use of the anticausative has different locations on the causalness scale. In Spanish, verbs with a causalness value of 40 and higher tend to form marked anticausatives only, while in French this cut-off point is higher: verbs with a causalness value of 50 and higher tend to form marked anticausatives only. This difference with respect to the cut-off point for the encoding of the anticausative is in line with statements from the literature according to which only a very small number of Spanish alternating verbs form unmarked anticausatives (see Levy 1994, Sánchez Lopez 2002), while in French the number of verbs which form unmarked anticausatives is

relatively high (Rothemberg (1974) counts about 300 such verbs; see also Heidinger (2014)).¹²

Finally I take a closer look at the verbs which have a correspondent in both languages, e.g. French *maigrir* and Spanish *adelgazar* ‘make/become thinner’ (see Table 6 in Section 3.1). The question is whether corresponding verbs behave similarly with respect to causalness and encoding. The relevant data for the 14 verb pairs is given in Table 10. The pairs are ordered in increasing causalness of the French verb, the values in parenthesis following the Spanish verbs indicate the causalness-rank of the Spanish verbs. For both the French and Spanish verbs the causalness, the encoding of the anticausative alternant (% mAC) and the encoding of the causative alternant (% mC) are indicated.

Meaning	Verb		Causalness		% mAC		% mC	
	French	Spanish	Fr.	Sp.	Fr.	Sp.	Fr.	Sp.
‘make/become big’	<i>grandir</i>	<i>agrandar</i> (12)	5.39	49.09	0.00	100.00	18.75	0.00
‘make/become thinner’	<i>maigrir</i>	<i>adelgazar</i> (6)	6.38	39.39	0.00	45.00	100.00	23.08
‘make/become soft’	<i>mollir</i>	<i>ablandar</i> (3)	8.11	35.94	0.00	100.00	33.33	0.00
‘make/become yellow’	<i>jaunir</i>	<i>amarillear</i> (1)	26.39	20.83	0.00	0.00	0.00	0.00
‘make/become big’	<i>grossir</i>	<i>engordar</i> (2)	27.82	30.61	1.56	2.94	18.92	13.33
‘decrease’	<i>diminuer</i>	<i>disminuir</i> (5)	41.88	37.78	0.00	1.79	2.50	2.94
‘enlarge’	<i>élargir</i>	<i>ensanchar</i> (8)	48.76	40.30	100.00	100.00	0.00	0.00
‘intensify’	<i>intensifier</i>	<i>intensificar</i> (6)	49.33	39.39	100.00	100.00	0.00	0.00
‘increase’	<i>augmenter</i>	<i>aumentar</i> (11)	50.57	44.65	4.20	1.14	4.10	7.04
‘multiply’	<i>multiplier</i>	<i>multiplicar</i> (9)	53.97	42.45	99.09	100.00	0.00	1.69
‘make/become hard’	<i>endurcir</i>	<i>endurecer</i> (4)	65.00	37.68	100.00	97.67	7.69	0.00
‘open’	<i>ouvrir</i>	<i>abrir</i> (13)	71.03	71.50	100.00	100.00	0.00	0.00
‘improve’	<i>améliorer</i>	<i>mejorar</i> (10)	79.66	44.05	100.00	2.13	0.00	2.70
‘close’	<i>fermer</i>	<i>cerrar</i> (14)	90.16	84.69	91.67	100.00	0.00	0.00

Table 10
Causalness and encoding for corresponding verbs

In order to interpret the data with respect to similarities or differences between corresponding verbs, I have categorized the 14 verb pairs based on two binary features:

similarity in causalness and similarity in encoding.¹³ The possible combinations of the two features yield the following four categories: (i) similar causalness and similar encoding, (ii) similar causalness, but different encoding, (iii) different causalness and different encoding, and (iv) different causalness, but similar encoding. Table 11 indicates the number of verb pairs in each of the four categories.

		Causalness		
		Similar	Different	
Encoding	Similar	8	2	10
	Different	0	4	4
		8	6	14

Table 11
Similarity between French and Spanish corresponding verbs

In eight of the 14 pairs, the corresponding verbs have similar causalness and similar encoding, in four pairs they have different causalness and different encoding, and in two pairs they have different causalness but similar encoding. None of the verb pairs has similar causalness, but different encoding. The respective verb pairs for the three attested categories are given in (17)–(19).

(17) Verb pairs with similar causalness and similar encoding:

jaunir×amarillear, grossir×engordar, diminuer×disminuir, élargir×ensanchar,
intensifier×intensificar, augmenter×aumentar, ouvrir×abrir, fermer×cerrar

(18) Verb pairs with different causalness and different encoding:

grandir×agrandar, maigrir×adelgazar, mollir×ablandar, améliorer×mejorar

(19) Verb pairs with different causalness, but similar encoding:

multiplier×multiplicar, endurecir×endurecer

Although the total number of verb pairs that has been investigated is rather small, the distributions in Table 11 show nevertheless that corresponding verbs tend to behave similarly with respect to causalness and encoding: Verbs with similar encoding tend to have similar causalness and verbs with similar causalness tend to have similar encoding.¹⁴ This agrees well with the above mentioned general commonalities between French and Spanish (robust correlations between causalness and encoding, marked anticausatives are more frequent than marked causatives, verbs tend to form either unmarked or marked anticausatives).

If we only consider the verb pairs with similar causalness and verify whether they are also similar with respect to encoding, we see that 8 of the 8 verbs with similar causalness have similar encoding (see Table 11). Conversely, if we only consider the verb pairs with similar encoding and verify whether they behave similarly with respect to causalness, we see that out of the 10 verb pairs with similar encoding 8 pairs have similar and only two pairs have different encodings (see Table 11). We can thus conclude that (i) verb pairs with similar causalness tend to have similar encoding and that (ii) verb pairs with similar encoding tend to have similar causalness.

As concerns the four verb pairs with different causalness and different encoding, it should be noted that their behavior is in line with the overall result of this study, namely that causalness and encoding correlate. It is expected that verbs which differ with respect to causalness also differ with respect to encoding, and vice versa. The fact that the verbs of these pairs differ with respect to both causalness and encoding relates to an

issue other than the tested prediction, namely, whether verbs of different languages which have the same or similar meaning also have similar causalness and encoding.¹⁵ Thus, the only verb pairs that do not fit the expectations are the two pairs which have different causalness, but similar encoding.

4. CONCLUSIONS AND OUTLOOK

In this paper I have investigated the encoding, i.e. the morphological form, of French and Spanish verbs that participate in the causative-anticausative alternation. The main question was whether the encoding is related to the causalness of the verbs, i.e. their frequency of use as a causative and anticausative. Based on a corpus study of 20 French and 20 Spanish verbs I have shown that causalness and encoding correlate in both languages: verbs with a high degree of causalness tend to form marked anticausatives and unmarked causatives more often than verbs with a low degree of causalness, and verbs with a low degree of causalness tend to form marked causatives and unmarked anticausatives more often than verbs with a high degree of causalness. Further commonalities between the two languages that have been identified are that marked anticausatives are more frequent than marked causatives, and that the verbs tend to form either unmarked or marked anticausatives. The only difference between the two languages that has been detected is that marked anticausatives (as opposed to unmarked anticausatives) are more frequent in Spanish than in French. The comparison of 14 French-Spanish corresponding verbs has shown that verb pairs with similar causalness tend to have similar encoding and that verb pairs with similar encoding tend to have similar causalness.

The main empirical result of the study – namely the correlation between causalness and encoding – raises the question whether the observed correlation corresponds to a

causal relation. This question is relevant because of the fact that a correlation between two variables does not imply a causal relation between the two variables.

In several recent publications, Haspelmath (2006, 2008) and Haspelmath et al. (in print) have argued that causalness is causally related to the encoding of the alternation via predictability. Haspelmath (2008: 5) assumes that ‘[t]he more predictable a sign is, the shorter it is’, and since frequency implies predictability he concludes that ‘[t]he more frequent a sign is, the shorter it is’. The consequence for the encoding is that ‘[w]hichever member of the pair [causative or anticausative] occurs more frequently tends to be zero-coded, while the rarer (and hence less expected) member tends to be overtly coded’ (Haspelmath 2008: 13). The causal chain that results from these assumptions is represented in (20).

(20) Causalness/Frequency → Predictability → Encoding

An alternative way to account for the correlation between causalness and encoding would be to suggest that causalness and encoding are not causally related, but instead correlate because they have a common source, namely the verbs’ spontaneity.¹⁶ The respective causal chain is given in (21) (see also Heidinger 2012).

Causalness

↑

(21) Spontaneity → Encoding

As concerns the relation *Spontaneity* → *Causalness* the basic idea is that spontaneous verbs form more often anticausatives than causatives because they denote events where the external cause is not salient and the anticausative construction is one where the external cause is not expressed as an argument. Conversely, non-spontaneous verbs form more often causatives than anticausatives because they denote events where the external cause is salient and the causative construction is one where the external cause can be expressed as an argument.

Under the assumption that causalness is a reflex and thus an indicator of spontaneity (low causalness = high spontaneity), the observed correlation between causalness and encoding (see Section 3) is also one between spontaneity and encoding. In (21) the relation between spontaneity and encoding is represented as a causal relation where spontaneity influences encoding (*Spontaneity* → *Encoding*). To get an idea of how spontaneity might influence encoding we must take a look at French anticausatives.

It has been argued in the literature that the two types of French anticausatives differ semantically in that the event is presented as occurring more spontaneously if it is encoded by unmarked than if it is encoded by marked anticausatives.¹⁷ The correlation between spontaneity and encoding could then be interpreted as the result of combinatory preferences: spontaneous verbs combine more easily (and thus more often) with the encoding variant *unmarked anticausative* than non-spontaneous verbs do, because this encoding is semantically more spontaneous.¹⁸

An in-depth evaluation of this alternative to Haspelmath's frequency based account requires further research in at least two domains: spontaneity as a lexical semantic property of verbs and the semantic differences between the encoding variants of the two alternants. As concerns spontaneity, it is desirable that other diagnostics for a verb's

spontaneity besides causalness are identified. This would allow one to re-evaluate the relation between spontaneity and causalness. But a more direct access to a verb's spontaneity is also necessary to evaluate the assumed causal relation between spontaneity and encoding (the first step would then be to verify whether there is indeed a correlation between spontaneity and encoding). The outlook from the empirical results presented in this paper is thus that the semantic side of the phenomenon needs to be investigated in greater detail in order to interpret the observed correlation between causalness and encoding.

APPENDIX A

This appendix describes how coding decisions were made during the annotation of the corpus data. As a basic principle, all hits from the corpus searches were looked at and coded, i.e. a complete manual coding of the data has been conducted. On a first level the hits from the corpus searches fall into two classes: irrelevant vs. relevant tokens. On a second level the relevant hits belong to one of the four following subclasses: (i) unmarked causative, (ii) marked causative, (iii) unmarked anticausative, (iv) marked causative.

- (A) a. Irrelevant
- b. Relevant
 - (i) Unmarked causative
 - (ii) Marked causative
 - (iii) Unmarked anticausative
 - (iv) Marked anticausative

In the actual coding procedure of the corpus data, I looked at all hits from the corpus searches and decided whether a given hit is an instantiation of (i) to (iv) or not. In the positive case, the hit was coded for the respective construction (e.g. unmarked causative). In the negative case the hit was coded as irrelevant for the present study. In the following I describe the four relevant constructions (which are exemplified in (3) and (4) in Section 1 of this paper) and also make reference to those constructions which have been excluded.

As *unmarked causative*, I have coded hits such as (3a), in which
 – the respective verb is used transitively in its active voice,

- an ACTOR-subject and an UNDERGOER-object is present,
- the object is either a lexical or a pronominal NP, but in any case overtly expressed (this excludes absolute constructions with omitted objects from the set of relevant data).

Regarding the subject, it is always overtly expressed in French, while Spanish is a language with null subjects; the overt expression of the subject is therefore not a criterion in the Spanish data. Hits with null subjects are part of the set of relevant Spanish data.

The restriction to active sentences excludes passives from the set of relevant data. This restriction includes both stative and eventive passives, and all formal types of passives, which can be encountered in the two languages: periphrastic passives with auxiliaries, reflexive passives, and impersonal passives. Further, all types of impersonal constructions have been coded as irrelevant.

As *marked causative* I have coded hits such as (3b), in which

- the causative auxiliaries *faire* and *hacer* are combined with the infinitive form of the respective verb,
- the subject-argument of *faire/hacer* is an ACTOR and the object-argument of the infinitive verb is an UNDERGOER,
- the event is interpreted as a case of direct causation, i.e. no causal components come between the ACTOR and the UNDERGOER of the sentence. This last restriction excludes cases such as the French example in (B), where a transitive causative verb is causativized. The interpretation of this sentence is that the new owners made somebody drain the tarn.¹⁹

(B) [...] les nouveaux proprios avaient fait assécher la mare [...]

the new owners had made dry.up the tarn

‘The new owners had somebody drain the tarn.’

(Boudard, Mourir d’enfance, 1995; Frantext)

Further, I have excluded formal causativizations of marked anticausatives (e.g. French *faire se casser*) as well as anticausativizations of marked causatives (e.g. French *se faire casser*), as both cases involve a double marking on the initial unmarked form of the verb.

As *unmarked anticausatives* I have coded hits such as (4a), in which

- the respective verb is used intransitively in the active voice,
- the sentence only has one argument and this argument is an UNDERGOER.

One complication in the coding of the Spanish hits comes from the possibility of null subjects in this language. Hits where the only overtly expressed argument in the sentence is an UNDERGOER are in principle ambiguous between interpretations as an unmarked anticausative (UNDERGOER-V) or an unmarked causative (\emptyset_{ACTOR} -V-UNDERGOER). In many cases, however, this ambiguity disappears because of a mismatch between the number inflection of the verb and the number features of the UNDERGOER-argument. In the remaining cases the context provided enough information to decide whether the sentence includes an implicit subject or not (in the first case the hit was coded as an unmarked causative, in the second case it was coded as an unmarked anticausative); doubtful cases were discussed with native speakers.

As *marked anticausative* I have coded hits such as (4b), in which

- the respective verb combines with the reflexive clitic *se* and is in its active voice,

- the sentence only has one argument and this argument is an UNDERGOER,
- the sentence has an anticausative interpretation.

Due to the polyfunctionality of the clitic *se* in the two languages, the combination of all three criteria is important. The first two criteria (the clitic *se* and an undergoer as the sole argument) are also fulfilled by the reflexive passive. Hence the third criterion according to which no cause should be implied which distinguishes anticausatives from passives.

A final remark concerns the semantics of the verbs. Many of the verbs are attested in the corpus data both in concrete and figurative uses. Note that in the coding of the data, I have not taken into account this difference. The coding of the data as relevant or irrelevant solely relies on the above-mentioned criteria, but not on whether they show a concrete or figurative use of the verb.

APPENDIX B

	Unmarked causative	Marked causative	Unmarked anticausative	Marked anticausative	
<i>améliorer</i>	372	0	0	95	467
<i>assécher</i>	33	0	0	12	45
<i>attrister</i>	36	0	0	30	66
<i>augmenter</i>	257	11	251	11	530
<i>briser</i>	250	0	3	107	360
<i>casser</i>	276	4	22	31	333
<i>diminuer</i>	78	2	111	0	191
<i>élargir</i>	98	0	0	103	201
<i>endurcir</i>	12	1	0	7	20
<i>fermer</i>	110	0	1	11	122
<i>gonfler</i>	81	3	20	46	150
<i>grandir</i>	13	3	281	0	297
<i>grossir</i>	60	14	189	3	266
<i>intensifier</i>	37	0	0	38	75
<i>jaunir</i>	19	0	53	0	72
<i>maigrir</i>	0	9	132	0	141
<i>mollir</i>	2	1	34	0	37
<i>multiplier</i>	129	0	1	109	239
<i>ouvrir</i>	103	0	0	42	145
<i>refroidir</i>	51	5	77	56	189
	2017	53	1175	701	3946

Table A

Encoding of the causative and the anticausative alternant in French (absolute frequencies)

	Unmarked causative	Marked causative	Unmarked anticausative	Marked anticausative	
<i>ablandar</i>	23	0	0	41	64
<i>abrir</i>	138	0	0	55	193
<i>adelgazar</i>	10	3	11	9	33
<i>agrandar</i>	27	0	0	28	55
<i>amarillear</i>	5	0	19	0	24
<i>aumentar</i>	66	5	87	1	159
<i>cerrar</i>	166	0	0	30	196
<i>congelar</i>	15	0	0	16	31
<i>crecer</i>	0	4	167	0	171
<i>derrumbar</i>	11	0	0	95	106
<i>disminuir</i>	33	1	55	1	90
<i>endurecer</i>	26	0	1	42	69
<i>engordar</i>	13	2	33	1	49
<i>enrojecer</i>	15	9	93	4	121
<i>ensanchar</i>	27	0	0	40	67
<i>hervir</i>	7	5	67	0	79
<i>intensificar</i>	13	0	0	20	33
<i>mejorar</i>	36	1	46	1	84
<i>mojar</i>	82	0	0	14	96
<i>multiplicar</i>	58	1	0	80	139
	771	31	579	478	1859

Table B

Encoding of the causative and the anticausative alternant in Spanish (absolute frequencies)

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FOOTNOTES

¹ Compared to the original definition by Nedyalkov & Silnitsky (1973) (adopted also by Haspelmath (1987, 1993)) the definition of anticausative applied in this paper is less rigid on the formal side, but more rigid on the semantic/functional side. I will adopt the view expressed by Alexiadou et al. (2006) and Schäfer (2008) that anticausative verbs must participate in the causative alternation, but that the anticausative use of the verb does not have to be overtly marked.

² In the literature, the distinction between the two types of causatives in French and Spanish is often expressed as the terminological distinction between *analytic*, *periphrastic* or *syntactic causatives* on the one hand and *lexical causatives* on the other. As noted by an anonymous *JL* referee, it needs to be stressed that marked causatives can also be formed morphologically, although not in French and Spanish. Cf. Georgian *duy-s* ‘cook (intransitive)’ vs. *q-duy-eb-s* ‘cook (transitive)’ (Haspelmath 1993).

³ One issue which has been extensively discussed in the recent literature on anticausatives is whether anticausative formation involves a semantic operation of ‘reflexivization’, as originally suggested by Chierchia (2004). I will not discuss this matter in this article but refer the reader to the recent debate in Koontz-Garboden (2009), Horvath & Siloni (2011, 2013), Kailuweit (2012), Beavers & Koontz-Garboden (2013a, 2013b), and Schäfer & Vivanco (2013).

⁴ The constructions that count as marked and unmarked causatives and as marked and unmarked anticausatives have been briefly introduced in Section 1. A more detailed description of the coding decisions applied to the corpus data is given in Appendix A.

⁵ Since the causalness of a verb is calculated based on the frequencies of the causative and the anticausative use and these frequencies are in turn the sum of the respective marked and unmarked variants – ($AC = uAC + mAC$; $C = uC + mC$) – it follows that causalness is not calculated independently from the frequencies of the marked and the unmarked variants. A different formulation of (5) would thus be: $Causalness = ((uC + mC) \times 100) / ((uC + mC) + (uAC + mAC))$. As the prediction in (6) relates causalness to the frequency of the encoding variants, an anonymous *JL* referee has stated concerns about the dependence of causalness on the frequency of the variants. However, the fact that a verb’s frequency in the four encoding types is used in the calculation of a verb’s causalness is inevitable and lies in the very nature of the investigated phenomenon. Further, both predictions in (6) relate causalness to the

encoding of only one alternant – a fact that relativizes the above-mentioned dependence. For example, even if a verb's frequency of causative uses is driven by a large number of unmarked causative uses (as opposed to marked causative uses) this does not have *a priori* any implications for this verb's causalness, as the calculation of the causalness also involves the frequency of the second alternant (in this case the anticausative). It should be noted that Appendix B provides for each verb the absolute frequencies of uC, mC, uAC and mAC. Thus, the import of each encoding type to the causalness of a given verb is fully traceable.

⁶ This assumption can be motivated in different ways: either with verbal semantics or with frequency as a causal factor. I will come back to this issue in Section 4. An anonymous *JL* referee has stated concerns whether frequency measures are at all appropriate to investigate the encoding of the alternation. Although I agree that a frequency-based analysis and the construction of a paradigm (most probably on introspection data) have different virtues, I rather see methodological complementarity than an asymmetry as concerns the value for linguistic analysis. In Section 4 I try to show how the results from this frequency-based study can be a starting point for further research, which also takes into account the verbs' semantics.

⁷ The causative prominence of a verb meaning depends on whether it tends to be encoded cross-linguistically with a marked causative (and an unmarked anticausative) (= high causative prominence) or with a marked anticausative (and an unmarked causative) (= low causative prominence) (see Haspelmath et al. in print); the causative prominence of the 20 verb meanings used in Haspelmath et al. (in print) has been calculated based on Haspelmath (1993). For example, the verb meaning 'boil' has a very high and the verb meaning 'split' a very low causative prominence (Haspelmath et al. in print).

⁸ Interestingly, the strong negative correlation in English observed by Samardžić & Merlo (2012) is not confirmed by the results of Haspelmath et al. (in print). In fact, English is the language in the sample of Haspelmath et al. (in print) that shows the weakest correlation (Kendall Tau = 0.182) and it is one of two languages (out of seven) where the correlation is not significant ($p = 0.282$) (see Haspelmath et al. in print). An anonymous *JL* referee has pointed out in this respect that this difference shows that a verb's causalness also depends on the corpus that has been analyzed.

⁹ Note that Davies' (2002–) *Corpus del Español* provides the possibility of lemmatized searches. But as the subcorpus that is being searched cannot be defined in a way that satisfies the needs of this study, CREA was chosen as the data source (for example, in Davies (2002–) one cannot limit the search to the subcorpus of peninsular Spanish).

¹⁰ Labelle (1992) and others have shown that many French alternating verbs show variation in the encoding of the anticausative as they form both mAC and uAC. Our results do not contradict such findings since they rely on a different type of evidence and show different aspects of the use of the verbs. In introspection based analyses it is possible to test for each given verb whether it can form both mAC and uAC. Corpus based results however do not show whether a given construction, e.g. the unmarked anticausative use, is ungrammatical for a given verb. Thus the quantitative results only show quantitative preferences between the variants. Therefore, the strong preference of a given verb for one encoding variant does not imply that it cannot be used in both variants. Further, as noted by an anonymous *JL* referee, the low degree of variation in our results might also be due to the limited number of analyzed verbs. Basically the same holds for the results on the Spanish anticausative (see Mendikoetxea 1999, 2012 and Kailuweit 2012).

¹¹ Note that this difference between the two alternants constitutes at the same time a commonality among the two languages, since we observe the difference in both French and Spanish.

¹² An anonymous *JL* referee has expressed concerns about the significance of this observation given the small number of analyzed verbs. I certainly agree that a larger sample size would increase the reliability of the analysis. However, I think that the observed difference is worth being reported, especially in relation to the statements from the literature.

¹³ The threshold value for the distinction between *similar* and *different* is 10: similar with respect to causalness are verb pairs where the difference between the causalness values of the corresponding verbs is not higher than 10; similar with respect to encoding are verb pairs where the difference between the percentages for the encodings does not exceed 10 in the encoding of either alternant (causative or anticausative).

¹⁴ Fisher's exact test ($p=0.015$) shows that the observed distribution differs significantly from random distribution: (i) verbs with similar encoding and verbs with different encoding differ with respect to

having similar or different causalness, and (ii) verbs with similar causalness and verbs with different causalness differ with respect to having similar or different encoding.

¹⁵ As noted by an anonymous *JL* referee, the members of these four pairs differ with respect to their morphological form. Together with the different behavior concerning causalness and encoding this is yet another observation which makes one doubt whether the respective verbs form a pair. Although they seem to share a core meaning they also seem to differ in their causal structure, i.e. the salience of an external cause.

¹⁶ Changes of states differ with respect to the salience of a cause external to the entity that undergoes the event. Events where the external cause is very salient have a low degree of spontaneity, whereas events where the external cause is not salient have a high degree of spontaneity. Accordingly, a verb's spontaneity is a lexical semantic property that can be described based on the type of event it denotes: *spontaneous verbs* denote events without a salient external cause, while *non-spontaneous verbs* denote events with a salient external cause.

¹⁷ Although the authors do not use the term spontaneity, their descriptions of the difference between marked and unmarked anticausatives relate to the semantic dimension that has been described as spontaneity above (see Rothenberg 1974, Zribi-Hertz 1987, Forest 1988, Labelle 1992, Bassac 1995, Kupferman 2008, Heidinger 2010, Kailuweit 2010; see Martin & Schäfer 2014 for the opposite view).

¹⁸ Similarly, Mendikoetxea (1999: 1602; 2012) argues that Spanish alternating verbs which encode the anticausative with the unmarked variant are internally caused (see also Rodríguez Ramalle 2005: 245). Schäfer (2008: 161f.) presents a scale in which spontaneity is related to the encoding variants of the anticausative alternant in German, Greek and Italian. As concerns the causative alternant, it has been noted that analytic and lexical causatives differ with respect to the possible interpretations of the causal relation between the subject and the complement: while analytic causatives allow for both direct and indirect causation, lexical causatives only allow for direct causation (see Schäfer 2009; for a formal semantic description see Bittner 1999). Although the data presented in this study only involves direct causation, i.e. without intervening elements in the causal chain, it is nevertheless indicative that the type of causative that allows for indirect causation is the formally marked one.

¹⁹ An anonymous *JL* referee asks how the distinction between direct and indirect causation was operationalized in the coding procedure of the data. In cases such as (B) this is a matter of interpretation and depends solely on the semantics of the sentence (for which in doubtful cases native speakers have been consulted) – unlike in cases such as *John made Mary break the vase* where two ACTORS are overtly expressed (Mary being simply speaking at the same time the UNDERGOER of *make* and the ACTOR of *break*).