How speakers interpret the negative markers *no* and *no…pas* in Catalan[1]

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Abstract

This paper reports the results of an experimental investigation designed to test the interpretation of the optional doubling of the negative markers *no* and *pas* in Expletive Negation (EN) contexts and in preverbal Negative Concord Items (NCI) contexts in Catalan. We show that in EN contexts a negative interpretation of *no* is preferred to an expletive one, with non-negative readings being less widespread than expected from what is described in traditional grammars. In NCI contexts the overt presence of *no* basically contributes to a single negation interpretation, thus confirming the status of Catalan as a Negative Concord language. We also show that, in the absence of discourse environments, *pas* in both EN and NCI contexts shows a variable interpretation, a characteristic of negative polarity items. Our results indicate that *pas* does not increase the amount of negative interpretation of *no* in EN contexts, or of Double Negation in NCI contexts, but is an item dependent on the interpretation of *no*. We conclude that the strengthening role of Catalan *pas* (at stage two of Jespersen's cycle), while associated with the expression of metalinguistic negation, does not reverse the truth or falsity of a proposition.

Keywords: expletive negation, single negation, *no, pas*, Catalan

1. Introduction

In this paper, we experimentally investigate the interpretation that Central Catalan speakers attribute to the negative marker *no* in two different syntactic contexts, namely (i) the subordinate clause of fear verbs such as *em temo* 'I fear' and *em fa por* 'I am afraid', and (ii) the sequence Negative Concord Item (such as *ningú* 'nobody') + *no* + V. In addition, the role of *pas* in the same contexts is also studied.

As described in the literature (Fabra 1956, Badia 1962, Solà 1973, Espinal 2002, IEC 2017), the Catalan marker *no* generally reverses the polarity of an affirmative sentence, expressing the function of the sentential negation marker. This is illustrated in (1).

(1) a. En   Joan menja carn.
       the   John eats   meat
       'John eats meat'
  b. En   Joan *no*   menja carn.
       the   John not   eats   meat
       'John doesn't eat meat'

Yet, *no* may also fail to reverse the polarity of the sentence when it occurs in the propositional complement of predicates such as *em temo* lit. me fear 'I fear' and *em fa por* lit. me make fear 'I am afraid', as illustrated in (2). The non-polarity reversing interpretation of *no* in the context of so called expletive negation (EN) triggers from now on will be referred to as a non-negative reading.[2]

(2)   *Em fa   por* que en   Joan *no*   mengi   carn.
       to.me makes fear that the   John not   eats.SUBJ meat
       'I am afraid that John eats meat'

According to prescriptive grammars of Catalan, in the subordinate clause of a predicate triggering EN such as *tinc por* lit. have fear 'I am afraid', both indicative and subjunctive moods are possible (Fabra 1956: 103-104), as can be seen in (3) and (4). Notice that (3b) has a negative reading, while (4b) is ambiguous between a non-negative reading and a single negation reading.

(3) a. Tinc por que   arribaran.
       have fear that   come.IND
       'I'm afraid that they will come.'
  b. Tinc por que   *no*   arribaran.
       have fear that   not   come.IND
       'I'm afraid that they will not come.'

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[2] Apart from verbs expressing fear, triggers of 'expletive' negation include *to doubt, to stop, to refuse,* some prepositions such as *before, until*, and some exclamative sentences (Vendryès 1950, Martin 1984, Muller 1991, Portner and Zanuttini 2000, Horn 2010, a.o.). See, more recently, Krifka (2010) and Delfitto (2013), who defend that 'expletive' negation is in fact negatively interpreted under the scope of German *bevor* 'before', since it yields the complement of the set of times that represents the unnegated proposition. It is interesting to bear in mind that already in Latin *ne* was used expletively (ia), as it is also used in current French (ib), in affirmative subordinate clauses (Muller 1991).

(i)   a.   Timeo *ne* veniat.
        b.   Je crains qu'il *ne* vienne.

For a special reference to Catalan EN see Par (1923), Fabra (1912, 1918, 1956), Badia (1962), and Espinal (1991, 1992, 1997, 2000, 2002, 2007).

(4) a. Tinc por   que   arribin.
         have fear that come.SUBJ
         'I'm afraid that they might come.'
      b. Tinc por   que   *no*   arribin.
         have fear that not   come.SUBJ
         'I'm afraid that they might come.' / 'I'm afraid that they might not come.'

The aforementioned semantic difference finds an explanation in the literature on the grammatical role of mood (Stowell 1993, 1995; Giannakidou 1994, 1995; Quer 1998; a.o.). While the indicative is claimed to display anti-polar properties –since it has to get out of the scope of an operator or a licensing predicate–, the subjunctive is claimed to be polar, in the sense that it has to be licensed in the scope of a polar or intensional operator of the relevant kind. In particular, in the context of non-veridical operators, those in which *Op p* does not imply *p* (Zwarts 1995), the truth of $\neg p$ can be entertained, thus suggesting that in the scope of a non-veridical predicate (e.g. *tenir por* 'to be afraid', *dubtar* 'to doubt', the prospective preposition *abans* 'before', etc.) a negative sentence may, but does not have to, express a negative proposition.

Catalan is also well known among Negative Concord (NC) languages for optionally allowing the marker *no* with preverbal Negative Concord Items (NCIs), as illustrated in (5).

(5)   *Ningú* (*no*) porta   maleta.
         nobody not   carries suitcase
         'Nobody carries a suitcase.'

Because of this peculiar phenomenon, Catalan has been argued, on the one hand, to be partially similar to Strict NC languages (such as Greek and Romanian), where negative doubling is obligatory with NCIs in all syntactic positions and always leads to a single negation reading, and, on the other hand, partially similar to Non-Strict NC languages (such as Italian and Spanish) (Zeijlstra 2004, and ff.), where preverbal NCIs do not usually co-occur with a doubling negation.[3]

Like the doubling negation of Strict NC languages, the optional *no* in such contexts is standardly assumed to leave the single negation meaning triggered by the presence of the

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[3] Notice that the literature on Italian and Spanish (Haegeman 1995, Suñer 1995, Godard & Marandin 2007, a.o.) points out the possibility that a subject NCI in combination with a sentential negative marker may yield a double negation interpretation, the acceptability and interpretation of these sentences being sometimes dependent on prosody.

(i)   *Nessuno NON* viene.   (Godard & Marandin 2007:138, ex. (2))
         nobody   not   comes
         'Everybody is coming.'
(ii)   *Nadie   no*   lo hizo.   (Suñer 1995:234, footnote 4)
         nobody not   it did
         'Everybody did it.'

NCI unaffected. When *no* fails to affect the polarity of a negative sentence introduced by a preverbal NCI, it has been theoretically postulated that the sentential negative marker could be expletive (Espinal and Tubau 2016b; cf. Van der Wouden and Zwarts 1993, Zeijlstra 2004). Yet, the opposite view, i.e. the possibility that *no* could be fully negative with a preverbal non-negative NCI has also been defended in the literature, though, perhaps more specifically in approaches to Strict NC that take NCIs to be universal non-negative terms (Giannakidou 2000, Shimoyama 2011), a position which is usually not held for Catalan NCIs in most accounts of Catalan NC.

An additional property of Catalan negative constructions resides in the fact that the Catalan negative marker *no* can optionally be accompanied by *pas*. Like its better-known French counterpart, Catalan *pas*, derives from the Latin nominal *passum* 'step', originally a nominal minimizer expression that became a reinforcer of negation (Horn 2010), which is now assumed to have an adverbial status. Importantly, however, unlike its French counterpart, in Central Catalan, *pas* is by itself unable to reverse the polarity of a sentence, and, hence, to carry on its own the role of a sentential negation marker.[4] Hence, it must always co-occur with *no*. See (6a-c).[5]

(6) a. En   Joan *(*no*) menja *pas* carn.
     the   John not   eats   *pas* meat
     'John doesn't eat meat'

   b. Em   fa   por que en   Joan *(*no*) mengi   *pas*   carn.
     to.me makes fear that the   John not   eats.SUBJ *pas*   meat
     'I'm afraid that John doesn't eat meat'

   c. *Ningú*   *(*no*)* porta   *pas* maleta.
     nobody   not   carries *pas* suitcase
     'Nobody carries a suitcase.'

In Central Catalan postverbal *pas* has lost the nominal and indefinite meaning of the minimizer, but has not yet become the expressor of sentential negation: it must always occur under the scope of the overt sentential negative marker *no*.[6] According to IEC

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[4] Central Catalan is the variety spoken in the province of Barcelona, most of Girona and part of Tarragona. Although *pas* is common in the varieties spoken in Catalonia, it is not in Valencian and Balearic. In Northern Catalan, i.e. the Catalan spoken in the South of France (Conflent, Vallespir and Roussillon), *pas* is the sentential negative marker, as it is in French.

(i)   Mengi *pas*.   (IEC 2017)
       eat   pas
       'I'm not eating.'

[5] It seems that *pas* has not allowed historically any licensor other than *no* (M. Pérez-Saldanya, p.c.).

[6] In the recent prescriptive *Gramàtica de la Llengua Catalana* (IEC 2017) the possibility of an interrogative licensor for *pas* is also pointed out, beyond what is canonical in Central Catalan, but notice that these sentences are anti-expectational interrogatives (Prieto & Rigau 2007:45).

(i)   a. Que vindràs *pas* a Barcelona?   (Rossellonese)
         that   come   pas to Barcelona
         'Aren't you coming to Barcelona? [I thought you were coming with us]'

    b. Que has   vist   *pas*   la   meva jaqueta? (Camp de Tarragona)

(2017:1309-10), *pas* is found (i) in negative sentences, in which a previous proposition (either implicit or explicit) is denied, as in (7B), and (ii) in negative sentences, to reinforce a previous negative proposition (expressed implicitly or explicitly), as in (8B).[7]

(7) A. Què   t'ha   dit   ta   mare?
        what you.has told   your mother
        'What dis your mother tell you?'
     B. No   hi   he   parlat *pas*, amb la mare.
        not there have spoken pas with the mother
        'I have not spoken to her at all.'

(8) A. Ara ja   no vindran.
        now already not come
        'They will not come now.'
     B. Efectivament, no vindran *pas* tan   tard.
        exactly   not come   pas   so   late
        'Exactly, they will not come so late.'

The uses of *pas* in (7) and (8) have been described in Espinal (1993, 1996) in the following terms: *pas* conveys metalinguistic negation (Horn 2010, Martins 2014), since this item constrains the types of procedural meaning that can be drawn.[8] Hence, it requires access to some proposition relevant in the discourse context and it either leads to a denial or cancellation of a positive proposition (as in (7B)), or to a reinforcement of a negative proposition (as in (8B)). In Schwenter's (2006) terms, the distribution of *no* V *pas* (which corresponds to stage two of Jespersen's 1917 negation cycle) is strictly controlled by information-structural factors: *pas* requires a salient proposition in the accessible discourse environment that is either denied or confirmed.

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        that   has   seen pas   the   my   jacket
        'Did you see my jacket anywhere, perhaps?'

[7] We will hereby focus on the use of *pas* in negative sentences, but the reader should be aware of the fact that *pas* is also used in Central Catalan in ban statements, to express a threat, as in (i); in interrogative sentences, to enquire on a situation that the speaker considers potentially true, as in (ii); and in comparative sentences of inequality, to introduce the second term of the comparison, as in (iii). All the examples that follow are extracted from IEC (2017:1310).

(i)   *No*   em   facis *pas*   aquesta mala pasada.
       not   me   make   pas   that   bad action
       'Don't make me that!'
(ii)   Fa   fred. *No*   hi   ha *pas* cap finestra oberta?
       makes cold   not   there has pas no   window open
       'It's cold. Is there any window open?'
(iii) Fa   més   calor a dins que   *no pas* a fora.
       makes more   hot   inside than   not pas outside
       'It's hotter inside than outside.'

[8] See Batllori (2016:347) for whom *pas* is a Negative Emphatic Polarity Particle, where 'emphatic' means that it "conveys metalinguistic negation (that is, it intervenes in presupposition-denying contexts, descriptive semantic contradictions or other types of objections to a previous assertion)".

Let us consider again the examples in (6), which replicates examples (1b), (2) and (5) respectively, but now with an added optional *pas*. In negative declarative sentences, such as (6a), the presence of *pas* pragmatically contributes both to the proposition expressed (i.e., a negative proposition), and to conventional implicatures that can be inferred from the utterance: either the reinforcement of an accessible negative proposition (e.g., Joan does not eat meat indeed) or the rejection of an accessible positive proposition (e.g., Joan eats meat). For (6b), a context known to license EN, there are no predictions in the literature on the effect of *pas* on its meaning, but since sentences in the subjunctive are polar, both non-negative and negative readings are expected to be in principle possible. In sentences with preverbal NCIs, such as (6c), the presence of *pas* is expected to enforce the presence of *no* and reinforce its negative meaning, hence, de facto, eliminating its optionality. As shown in (6a-c), if *pas* occurs alone, the sentences are ungrammatical.

Furthermore, *pas* does not license postverbal NCIs, as illustrated in (9), from Batllori (2016:353, ex. (5c)).[9]

(9)   *En Joan ha   vist *pas   ningú.*
         D   Joan has   seen pas   anybody

Clearly then, the distribution of *pas* in Central Catalan stands in strong opposition to that of the better-known contemporary French *pas*, which, as is well known, functions by itself as the true exponent of logical negation, in contrast to *ne*, which is optional and fails to contribute polarity reversal to a proposition. In terms of the postulated negative cycle (Jespersen 1917), consider Table 1 (Labelle & Espinal 2014:196), which presents the distribution of French negative markers *ne* and *pas* in the history of this language.[10]

	Classical Latin	Old and Middle French	17th c.	19th c. spoken French	20th-21th c. spoken French
Negative marker	*non*	*ne…(pas)*	*ne…pas*	*(ne)…pas*	*pas*

Table 1. Jespersen's cycle in French

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[9] Notice that this sentence is grammatical in Northern Catalan, where *pas* is the sentential negative marker.

[10] Jespersen (1917:4) formulates a diachronic change that affects negative expressions in various natural languages. Clausal negation is first expressed by a single negative marker that precedes the finite verb. At a second stage, it is expressed by means of this negative marker in preverbal position followed by a noun or an adverb in postverbal position; next, the reinforcer marker takes on the function of expressing negation by itself, with the preverbal expressor of negation becoming optional, and, finally, the preverbal item becomes extinct and the postverbal one becomes the expressor of negation.

See also Horn (1989), Kiparsky and Condoravdi (2006), and Larrivée and Ingham (2011).

This diachronic change suggests that an item such as French *pas* is historically a strengthener of negation, since it reinforces the negative meaning of a previous existing negative item. The semantic weakening of negation led to *ne* being obligatorily accompanied by the noun *pas* 'step' (also *point* 'dot', *mie* 'crumb', etc.) in Classical French (17th c.), when no pronominal or adnominal negative expression was present in the clause. Spoken French *pas* is a negative marker that can be said to near the end of the cycle, having almost entirely supplanted *ne* in taking over the role of the original main negation marker.

Interestingly, the situation is very different in contemporary Central Catalan, where *pas* appears to be close to the situation found in Old and Middle French: it seems to merely serve as an optional, although semantically marked (because of its semantic constraints), negative polarity item that occurs with the main negation marker *no*.

In view of this difference between French and Central Catalan *pas,* and the standard common wisdom on Catalan negative constructions, which stands on two pillars, namely (i) the optionality of *no* in the context of EN triggers as well as in the context of preverbal NCIs, and (ii) the optionality of *pas* in all contexts, this paper has two central goals. The first one is to investigate experimentally whether there is a correlation between the interpretation of the optional *no* in EN and NCI contexts, which would provide empirical support for the hypothesis that non-negative readings in EN contexts and single negation readings in NCI contexts involve the use of a non-negative (i.e. expletive) *no*. Second, we aim at investigating experimentally what the contribution of *no* and the contribution of *pas* is in declarative sentences featuring both expletive and NCI contexts. In particular, we raise the question of whether *pas* indeed acts as a strengthener or reinforcer of negation in either or both of these contexts. Hypothetically, on a reinforcer view, the co-presence of *pas* should contribute to favour a negative reading of *no*. In EN contexts, the co-presence of *pas* should encourage the choice of a negative reading for *no* and not the non-negative one. Likewise, in NCI contexts, the co-presence of *pas* should enforce a negative reading of *no,* which added to the one triggered by the preverbal NCI, should favour a potential double negation (DN) reading. In short, as *pas* enforces the presence of *no* in both of these contexts and offsets its optionality, it is expected to act as a factor favouring a negative reading of *no*. Our experimental protocol was designed to reveal whether *pas* has such a strengthener or reinforcer role in the absence of an overt discourse context.

The structure of the paper is as follows. Section 2 presents the theoretical background that motivated our research questions, which are refined in turn, in Section 3. These two sections provide the theoretical motivation for the experimental research we undertook. Experiment 1 is then presented and discussed in Section 4. Experiment 2 is presented and discussed in Section 5. The theoretical significance of our results for general approaches of EN, NC and the Jespersen Cycle are examined in Section 6. Section 7 sums up our findings and concludes the paper.

2. Theoretical background

In Section 1 we have presented three characteristic phenomena of the grammar of Central Catalan: namely, (i) the optionality of *no* in EN contexts, (ii) the optionality of *no* in NCI contexts, and (iii) the optionality of *pas* in any of these contexts. In this section we review some of the proposals that have been put forward to explain these phenomena.

Regarding the optionality of *no* in EN contexts, this has been correlated with the expletivity of the negative marker. That is, *no* has been taken to behave as a polar item (Espinal 2007) that, due to its optionality, has no polarity reversal incidence on interpretation. Like polarity items, expletive *no* is semantically sensitive to a specific trigger, in particular, to a subclass of non-veridical operators (Zwarts 1995), and it is domain widening (Chierchia 2006), in the sense that both a positive and a negative state of affairs may be taken into consideration.

Recall, however, that in the subordinate clause of EN triggers *no* can also sometimes be attributed a negative reading, as observed in (3b) and (4b). Hence, it seems that a negative variant of *no*, in particular one that semantically corresponds to a logical negative operator, can also occur in EN contexts. In this paper we experimentally investigate to what extent Central Catalan speakers attribute these two possible readings (non-negative vs. negative) to *no* in different contexts.

Regarding the second phenomenon discussed above, which concerns the optional use of *no* with subject NCIs, it has been argued first by Van der Wouden and Zwarts (1993) and later by Zeijlstra (2004) that this optionality follows from dialectal variation. More specifically, these authors postulated two distinct varieties of Catalan. In the first variety (Catalan I), the presence of the sentential negation marker *no* is assumed to be as obligatory as in Strict NC languages and to lead to a constant single negation reading, i.e. a solid invariant NC interpretation. In the second variety (Catalan II), the presence of the sentential negation marker *no* with pre-verbal NCIs is essentially disallowed, and when enforced, it is predicted to lead to an obligatory DN interpretation, as has been observed for Non-Strict NC languages like Spanish.

However, how the optionality of *no* with subject NCIs and its semantic effect or lack thereof is to be analysed depends largely on how sentences with subject NCIs without *no* are analysed, as the question of where negation comes from in sentences that feature a single preverbal NCI not doubled by *no* is still a matter of debate. There are essentially three families of proposals currently being opposed. In a first family of analyses, the negation is assumed to come from the NCI itself (Haegeman & Zanuttini 1991, Zanuttini 1991, de Swart 2010). On these views, it is expected that the co-presence of an optional *no* should lead to a DN reading if *no* is negative. With an expletive variant of *no*, however, changes in the interpretation are not expected, so that the sentence should maintain a single negative reading.

In a second family of approaches, by contrast, the negation reading of subject NCI constructions without *no* is assumed to come from an abstract covert negation operator that c-commands the subject NCI. On such views, the NCI itself is considered to be a non-negative expression (Zeijlstra 2004, and ff.) and the single negation meaning arises from the presence of a covert negative operator as illustrated in the structure in (10b), corresponding to the example in (10a).

(10) a. *Ningú*   porta   maleta.
     nobody   wears   suitcase
     'Nobody is wearing a suitcase.'
   b. [OP¬ [iNeg] [TP ningú [uNeg] [vP porta maleta]]

In this case, it remains to be seen how this abstract negative operator can be hypothesized to interact with an optionally added overt marker *no* in preverbal position. Let us spell out here the various possibilities. First, it could be that the abstract negative operator still needs to be present to license the NCI despite the co-presence of *no* (which is a common assumption in current approaches to NC). If so, the addition of an overt *no* would result in DN if this *no* is semantically negative, or in single negation if, as assumed by Zeijlstra (2004) among others, this doubling *no* is in fact expletive (i.e. non-negative). Alternatively, it could be that the presence of an overt *no* obviates the need for the covert operator if the overt *no*, in turn, could suffice to satisfy the licensing of the subject NCI. On this second option, the co-presence of an overt *no* with the NCI may leave the polarity unchanged (i.e. still deriving a single negation reading) even if *no* is in fact semantically negative.

In a third family of accounts, NCIs have been postulated as lexically ambiguous between polarity items and negative quantifiers (Herburger 2001). In the particular case of Catalan, Déprez et al. (2015) and Espinal & Tubau (2016a,b) put forward a microparametric analysis of NCIs as polar (i.e. semantically dependent on a c-commanding operator (Chierchia 2006, Labelle & Espinal 2014)) on the one hand, and as an existential negative quantifier with the meaning $[\neg\exists]$ and a syntactic [uFoc] feature on the other.[11] The [uFoc] feature guarantees syntactic movement (the latest at LF) of the $[\neg\exists]$ NCI to a left periphery Focus position. Regarding the optionality of *no* in NCI contexts in this paper we investigate whether there are empirical arguments supporting the existence of two variants of *no* (a non-negative and a negative one).

Finally, regarding the third phenomenon, that is, the optional co-presence of *pas*, it should be remarked that in Central Catalan *pas* requires the co-presence of *no* (see the data in (6) above). Yet, the opposite does not obtain. Clearly, the co-dependence of *no* and *pas* in Catalan is the opposite of what is observed in French, where it has been argued that *ne* and *pas* are part of the same constituent, with *ne* being a head that cliticizes, and

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[11] See Déprez (1997, 1999, 2000, 2011a,b), Déprez & Martineau (2004) and Martins (2000) for different accounts that also propose the ambiguity of NCIs.

The literature on NCIs across languages is vast, with their quantificational status and (non-) negativity being the two issues at the heart of the debate. NCIs have been claimed to be universal quantifiers (Zanuttini 1991; Haegeman & Zanuttini 1991; Giannakidou 2000; de Swart & Sag 2002), polarity items (Bosque 1980; Laka 1990; Martins 2000), indefinites (Ladusaw 1992, 1994; Zeijlstra 2004; Tubau 2008), zero cardinal numerals with underspecified quantificational force (Déprez 1997, 2000; Espinal 2000), and ambiguous between polarity items and negative quantifiers (Herburger 2001). In the same vein, for some scholars NCIs are inherently negative (Zanuttini 1991; Haegeman & Zanuttini 1991; de Swart & Sag 2002), while for some others they are not (Ladusaw 1992, 1994; Espinal 2000; Giannakidou 2000; Zeijlstra 2004; Tubau 2008) and yet for others they can be fully negative in some languages or contexts such as French, and non-negative in other languages such as French-based creoles or contexts (Déprez 1997, 1999, 2000, 2011a,b).

pas a Specifier of the NegP constituent (Pollock 1989). However, in Central Catalan *pas* has been analysed as a negative polarity item that can only occur under the scope of the anti-polar operator *no* (Batllori 2016). The question that remains to be investigated experimentally, and that we will address in the present piece of research, is whether native speakers of Central Catalan assign an additional polarity reversal role to *pas* in EN and NCI contexts. Such role is characteristic of strengtheners of negation in stages of evolution posterior to stage two.

3. Research questions

In view of what we have presented in the previous sections this paper experimentally investigates three research questions concerning the compositional and contextual meanings of the Catalan negative markers *no* and *no…pas*, in order to illuminate current theoretical debates on negation, EN and NC in this language and beyond. In particular, we asked (i) to what extent and why Catalan speakers can associate a negative or a non-negative reading to the marker *no* in contexts known to potentially trigger EN; (ii) to what extent, if at all, this alternation could relate to the meaning of the marker *no* that optionally doubles preverbal NCIs, conveying either a DN or a single negation meaning; and (iii) what effect an additional *pas* could have in both EN and NCI contexts, and whether we can hold the assumption that *pas* has a reinforcing and disambiguating effect on the interpretation of negative sentences.

These empirical questions all relate to fundamental issues on negation in natural language, such as what it means for a particular linguistic form or marker to be or fail to be semantically negative, and how the form and meaning of a variety of negative items can interact to alternatively express or fail to express logical negation in a particular language.

To investigate our three research questions we designed two experiments. In the first one (Experiment 1), we aimed at preselecting the strongest possible EN-inducing triggers among two verbs (*fer por* 'to be afraid', and *témer* 'to fear') and one preposition (*fins* 'until'). In the second one (Experiment 2) we aimed at judging the hypotheses and predictions outlined below regarding the occurrence of *no* and *pas* in EN and NCI contexts in a picture-matching judgment task. The details of each experiment, as well as their results are given in Section 4 for Experiment 1 and in Section 5 for Experiment 2. However, before outlining the details of each experiment, our predictions are laid out in the present section.

Concerning our first question, it should be clear that in EN contexts, i.e., in the complement of EN triggers like *em fa por* 'I'm afraid' and *em temo* 'I fear', the negative marker *no*, if expletive, is expected to leave the polarity of the sentence containing it unchanged, so that the propositional complement should be interpreted mostly as positive. By contrast, a negative *no* should change the sentence polarity, deriving an embedded negative proposition. These empirical predictions essentially obtain independently of the particular theoretical account given to expletive negation.

For the second question, the issue is somewhat more complex. As is known, a preverbal NCI (e.g. *ningú* 'nobody', *cap N* 'no N') used without *no* is most characteristically associated with a proposition that expresses single negation in a Non-Strict NC language. The co-presence of the marker *no*, if the marker itself is negative, should logically be expected to change the polarity of this proposition from a single negation to a DN interpretation, a meaning that is logically affirmative as the result of the two negations (the preverbal NCI and *no*) canceling each other out. However, as was mentioned in Section 1, standard Catalan grammars have observed instead that the addition of *no* fails to affect the sentence polarity, maintaining instead a single negation interpretation, in similarity to what happens in Strict NC languages where the presence of an obligatory doubling negation does not affect the polarity of the sentence. This observation has then led researchers to hypothesize that the Catalan marker *no* that co-occurs with a subject NCI could in fact be expletive or non-negative, failing to express a semantic negation, just as it fails to do so in EN contexts.

On this view, the existence of a correlation between the availability or the preference for an expletive *no* in EN contexts and that for an expletive *no* with preverbal NCIs might be expected, since *no* could be assumed to be equally non-negative in both contexts. In the strongest possible sense this correlation could be formulated as follows: only speakers whose grammars feature the option of an expletive *no* should be able to use this same item in sentences with a subject NCI. The other speakers, who presumably do not have an expletive *no,* when presented with sentences that feature both a subject NCI and the marker *no*, should presumably pick a DN interpretation leading to a positive interpretation, as the literature claims to happen, for instance, in Italian and Spanish (Haegemen 1995, Suñer 1995, respectively). In short, if Catalan speakers have the option of interpreting *no* as expletive, and if the doubling *no* in sentences with subject NCIs is expletive as well, as hypothesized by Zeijlstra (2004) and Espinal and Tubau (2016a,b), a correlation between the amount of positive interpretation in EN contexts with *no* and of single negation interpretation in sentences with subject NCIs and a doubling *no* might be expected at least for some population of speakers.

The absence of such a correlation, in contrast, might lead to hypothesize that *no* is negative when doubling a non-negative subject NCI. If this is the case, then a single negation reading is predicted to come from a negative *no* in combination with polar NCIs, whereas a DN reading is predicted to come from both a negative *no* and NCIs conceived as negative existential quantifiers.[12] Still, the absence of a correlation between an expletive reading of *no* in EN contexts and a single negation reading in preverbal NCI contexts might also be due to the fact that native speakers have various combinations available coming from access to two variants of *no* (a negative operator and a polar sensitive item) and to two variants of NCIs (a negative quantifier and a polar item); that is, for some speakers a single negation reading might very well be composed by combining a negative NCI with a polar sensitive *no.* These are precisely the theoretical issues that our experimental investigation was designed to help solve.

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[12] See Déprez et al. (2015) and Espinal and Tubau (2016a,b) for details of the theoretical implications of each proposal.

With respect to our third research question, if the standard view of *pas* as a reinforcer of negation is correct, then it is expected that adding it to a proposition containing *no* should bias speakers towards a semantically negative reading of the proposition. If so, then, (i) the amount of negative interpretation for sentences with *no...pas* in EN contexts should be larger than the amount of single negation for sentences with *no* alone, and (ii) adding *pas* to sentences with a preverbal NCI and *no* should increase the amount of DN interpretation, mainly under the option where both the NCI and *no* are negative (or if both a covert negative operator licensing the NCI and *no* are negative and co-present), but not that clear if the NCI is non-negative and a negative *no* serves to license it.

In (8), the relevant predictions are summarized:

(8) 1. In EN contexts (i.e., in the complement position of EN triggers) if the negative marker *no* is non-negative, a positive polarity of the proposition should obtain; if it is negative, a negative polarity of the proposition should be inferred.
2. In NCI contexts (i.e., preverbal NCI + *no*) if the negative marker *no* is expletive, a single negation reading of the proposition should obtain; if it is negative a DN reading should be inferred.
3. If *pas* is a reinforcer of the negative reading of *no*, it should bias speakers towards a semantically more negative reading of the proposition: shifting from EN to single negation in EN contexts, and from single negation to DN in NCI contexts; if *pas* is a mere negative polarity item no such negative shifting is expected.

In the next two sections we explain how the questions and predictions exposed here motivated the design of two different experiments. In Sections 4 and 5 we also present the main results of this experimental research.

4. Experiment 1

The aim of Experiment 1 was to test whether and to what extent participants can interpret a sequence of an EN trigger such as *em fa por* ('I am afraid'), *temo* ('I fear') and *fins* ('until') followed by *no* + V + (*pas*) as conveying a non-negative or a single negation interpretation. According to traditional descriptive grammars of Catalan, both interpretations, i.e. a non-negative one and a single negation one, are optionally available when the mood of the subordinate clause is subjunctive, but only a negative one is expected when the mood of the subordinate clause is indicative (see Section 1).

Concerning *pas*, no predictions are made in traditional descriptive grammars regarding its interpretation in EN contexts. We conjectured that if the role of *pas* is to reinforce negation, it is plausible to think that adding it to sentences with *no* in EN contexts could bias the speakers to choose a negative rather than a non-negative reading of the marker *no*. If *pas* is a mere negative polarity item under the scope of a c-commanding *no*, by contrast, no significant changes of interpretation should be found when compared to the presence of *no* alone.

Experiment 1 was designed to serve as a preliminary selection task of the types of sentences with EN triggers that we aimed to include in Experiment 2. We searched for EN triggers to which participants could clearly attribute a non-negative reading when the subordinate clause including *no + V + (pas)* was in the subjunctive, but only a negative reading when the subordinate clause including *no + V + (pas)* was in the indicative.

4.1. Participants

A total of 129 Catalan speakers participated in a survey administered on-line using the SurveyMonkey software. The results of 35 participants were discarded since they were not native speakers of Central Catalan, which left the final database with 94 participants (71 women, 23 men). Their mean age in years was 42.06 (SD = 14.41), and manifested Catalan dominance in their daily life was 88.46% (SD=17.86). Demographic information was collected from a sociolinguistics questionnaire administered on-line right after the study that inquired about the participants' age, sex and level of studies, as well as the town/city where participants had spent most part of their childhood, the town/city where participants live habitually, and the percentage of use of Catalan in daily life. The average time for completing the task was 9 min 24 sec.

4.2. Design and materials

Experiment 1 consisted in a forced-choice test between two possible interpretations (a non-negative and a negative one) expressed in a written form assigned to sentences containing different EN triggers. The test sentences that participants were exposed to were associated with 4 different scenarios (i.e. tenants opening windows, children lighting fire, discovering cases of corruption, causing somebody to be imprisoned). For each scenario a different EN trigger was used: for the first two scenarios a verbal form, either *em fa por* lit. to me makes fear 'I'm afraid' or *temo* 'I fear', and for the latter two the preposition *fins* 'until' followed by the complementizer *que* 'that' that introduces the subordinate clause. The tense and mood of the subordinate alternated between the future indicative (IND) and the present subjunctive (SUBJ), and *pas* could be present or not. The verb of the subordinate clause was always an accomplishment verb. These alternations gave rise to the 6 different patterns in (11), which are illustrated with the sentences in (12).

(11) a. EN$_{trigger}$ [$_{CP}$ que…V$_{IND}$…]
    b. EN$_{trigger}$ [$_{CP}$ que…*no* V$_{IND}$…]
    c. EN$_{trigger}$ [$_{CP}$ que…*no* V$_{IND}$ *pas*…]
    d. EN$_{trigger}$ [$_{CP}$ que…V$_{SUBJ}$…]
    e. EN$_{trigger}$ [$_{CP}$ que…*no* V$_{SUBJ}$…]
    f. EN$_{trigger}$ [$_{CP}$ que…*no* V$_{SUBJ}$ *pas*…]

(12) a. *Em   fa   por* que els   llogaters   obriran   les   finestres.
        to.me makes fear that the tenants   open.IND   the   windows
        'I'm afraid that the tenants will open the windows.'

b. *Temo* que els nois *no* encendran el foc.
fear that the boys not light.IND the fire
'I fear that the boys will not light the fire.'

c. Investigaran el president *fins* que *no* descobriran *pas* casos de corrupció.
investigate.IND the president until that not discover. IND not cases of corruption
'They will investigate the president until they will not find cases of corruption'

d. *Em fa por* que els llogaters obrin les finestres.
to.me makes fear that the tenants open.SUBJ the windows
'I'm afraid that the tenants might open the windows.'

e. *Temo* que els nois *no* enceguin el foc.
fear that the boys not light.SUBJ the fire
'I fear that the boys might (not) light the fire.'

f. Farà xantatge fins que *no* l' empresonin *pas*.
do. IND blackmail until that not him imprison. SUBJ not
'(S)he will blackmail until he is (not) imprisoned.'

In short, our participants responded to a total of 24 sentences (4 scenarios in which three EN triggers [*em fa por*, *temo*, *fins*] appeared × 2 moods [indicative and subjunctive] × 3 structures [absence of *no*, presence of *no*, presence or absence of additional *pas* with *no*]). Of these patterns, (11a) and (11d) –without *no*– are expected to be unambiguously interpreted as affirmative sentences according to traditional descriptive grammars of Catalan. In a similar vein, the patterns in (11b) and (11c) –with *no* and *no…pas* and indicative mood in the subordinate clause– are expected to be unambiguously interpreted as conveying a negative proposition. Therefore, in Experiment 1 stimuli (11a-d) were expected to behave as controls. By contrast, the stimuli (11e, f) –all in subjunctive mood– constituted the critical stimuli, since they are described as ambiguous in traditional grammars, and we aimed at testing whether participants preferred, in the absence of context, a non-negative or a negative interpretation.

4.3. Procedure

Using the free software SurveyMonkey, participants had to select, out of two, the paraphrase that best represented the meaning of the test sentence they were presented with. The experiment was administered on-line, with stimuli being presented in a written form. An example of input is given in (13) with the two associated paraphrases in (13a) and (13b) respectively.

(13) *Em fa por* que els llogaters *no* obrin les finestres.
to.me makes fear that the tenants not open.SUBJ the windows
'I'm afraid that the tenants will (not) open the windows.'

a. Et fa por trobar-te les finestres obertes.
to.you makes fear find.you the windows open
'You are afraid that you'll find the windows open.'

b. Et fa por trobar-te les finestres tancades.

to.you makes fear find.you   the windows   closed
'You are afraid that you'll find the windows closed.'

Participants were asked to decide if (13) meant (13a) or (13b). The paraphrase in (13a) corresponds to a non-negative meaning of *no* since it provides a positive interpretation of the action in the subordinate sentence, namely, that the windows will stay open. The paraphrase in (13b), in contrast, corresponds to a negative meaning of *no*, since it gives a negative interpretation of the subordinate with the action not being performed by the tenants, so that the windows will stay closed. Participants were presented with the target sentence and the two possible readings on the screen and had to select their interpretation by clicking on the checkbox next to the paraphrase of their choice.

4.4. Measures and analyses

A total of 2,256 data points were obtained (94 participants $\times$ 4 scenarios with three EN triggers $\times$ 2 moods $\times$ 3 structures). These responses were analyzed using a Generalized Linear Mixed Model (GLMM) through IBM SPSS Statistics 24.

4.5. Results

Figures 1a and 1b show the percentage of positive (non-negative) interpretations that our participants attributed to the patterns EN trigger + V, EN trigger + *no* + V, and EN trigger + *no* + V + *pas* with the verb in the indicative and in the subjunctive in the four aforementioned scenarios (Figure 1a for the two verbal triggers; Figure 1b for the prepositional trigger).
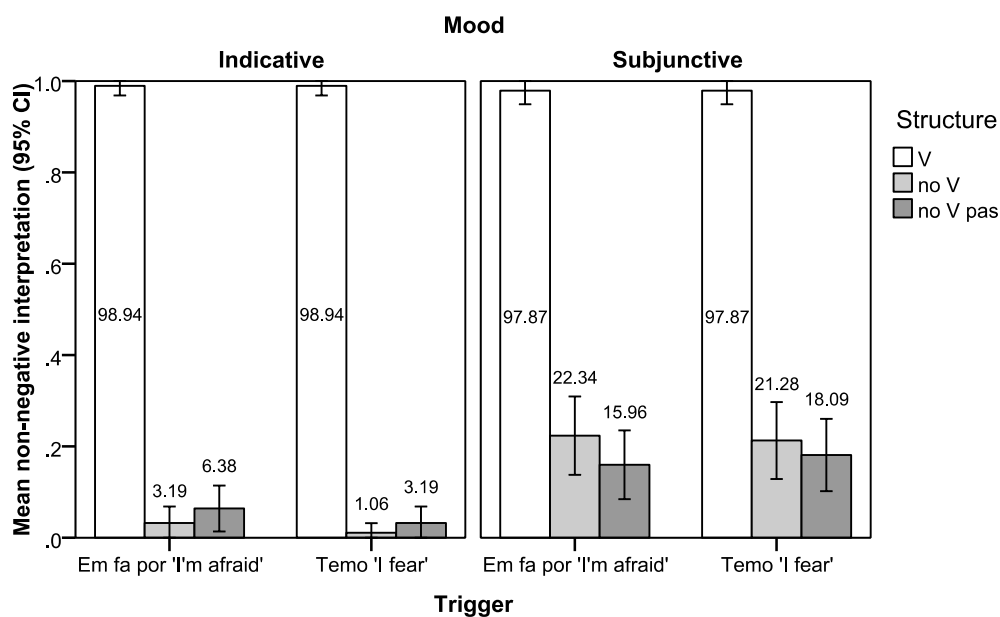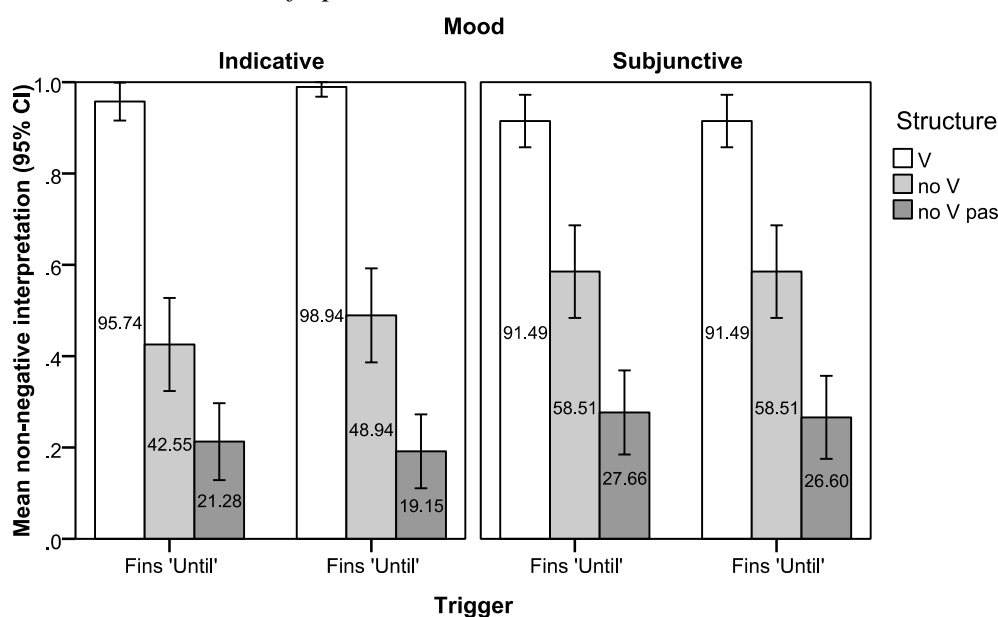

Figure 1a. Percentage of positive (non-negative) interpretation of the patterns EN trigger + V, EN trigger + *no* + V and EN trigger + *no* + V + *pas* with the verb in the

indicative (left panel) and in the subjunctive (right panel), for two EN verbal triggers: *em fa por* 'I am afraid', and *temo* 'I fear'.

Figure 1b. Percentage of positive (non-negative) interpretation of the patterns EN trigger + V, EN trigger + *no* + V and EN trigger + *no* + V + *pas* with the verb in the indicative (left panel) and in the subjunctive (right panel), for two examples of the *fins* EN trigger.

The most challenging result shown in Figure 1 is that our participants reacted differently in the case of verbal triggers (Figure 1a) and in the case of the prepositional trigger (Figure 1b). Sentences that did not contain *no* under an EN trigger (such as *em fa por* 'I am afraid', *temo* 'I fear') were interpreted almost 100% of the time as non-negative both in the indicative (99%) and in the subjunctive (98%). In the context of *fins*-clauses, without a negative marker, the non-negative interpretation is slightly lower both in the indicative (97%) and in the subjunctive (91%), which already gives some indication that this EN trigger behaves differently from the two verbal ones.

For the EN triggers *em fa por* and *temo,* sentences with the negative marker *no* were interpreted as non-negative (22%) when occurring in the subjunctive mood, but the rate of non-negative readings in the indicative (2%) is attributable to error. For the EN trigger *fins*, sentences with the negative marker *no* were also interpreted as non-negative more often in the subjunctive (59%) than in the indicative (46%), but unexpectedly the amount of positive readings in the indicative is close to 50%. Again, this suggests that sentences with *fins* + *no* + V$_{\text{IND}}$ did not behave as controls of the single negation interpretation.

Our results also show that in the presence of the added negative marker *pas*, a double distinction must be made: indicative vs. subjunctive, verbal triggers vs. prepositional trigger. The slight presence of positive readings for *pas* in the subordinate clause in indicative mood of the two verbal triggers could be considered an error, probably due to the fact that participants found these sentences weird (attending to the comments that

some of them expressed at the end of the test). Interestingly, sentences with *pas* in the subjunctive mood, and under the scope of verbal EN triggers, show the same tendency observed for *no*: they are interpreted as non-negative more often in the subjunctive (17%) than in the indicative (5%). Concerning the combination of the prepositional EN trigger *fins* 'until' and *pas* results neared 20% of non-negative readings in the indicative mood, and 27% of non-negative readings in the subjunctive mood. *Fins* 'until' behaved unlike *Em fa por* 'I am afraid' and *Temo* 'I fear' in that sentences with *no*, and sentences with *pas* in the indicative mood were interpreted as non-negative to a considerably higher extent than error; this tendency towards a non-negative interpretation was even enforced in the subjunctive.

It is beyond the scope of this paper and beyond the research questions pointed out in Section 3 to find out the reasons why the negative markers *no* and *pas* appear to be more expletive (non-negative) in the context of punctual *fins*-clauses than in the context of fear verbs.[13] However, since in the context of this preposition indicative subordinate clauses with *no* and *pas* did not work out as controls and behaved similar to critical stimuli in the subjunctive, we took these results to indicate that participants had stronger intuitions about the distinction between non-negative and negative readings in the context of *em fa por* and *temo*. Because of this, only verbal EN triggers were kept for further statistical analysis and for our next Experiment 2.

A GLMM was applied to the results of the two verbal triggers of Experiment 1. The model was defined with Participant × Trigger as the subject structure and Mood (indicative, subjunctive) × Structure (*no* + V, *no* + V + *pas*) as the repeated measures structure (Covariance Type: Diagonal). The participants' interpretation of the sentences was set as the dependent variable (Binomial distribution, Logit link). The fixed factors were Mood, Structure, and their interaction. Regarding the random factors, a random intercept was set for Participant, with random slopes over the three defined fixed factors (Covariance Structure: Variance Components). A main effect was found for Mood, $F(1, 748) = 69.544$, $\beta = -2.320$, $SE = .5133$, $t = -4.519$, $p < .001$, such that subjunctive sentences obtained significantly more positive interpretations than indicative sentences ($p < .001$) in all structures. However, Structure was not found to be a significant factor, $F(1, 748) = 1.905$, $\beta = .582$, $SE = .4152$, $t = 1.401$, $p = .168$, indicating that sentences with only *no* and sentences with added *pas* obtained a non-distinct number of positive readings over the two sentence moods ($p = .183$). The interaction Mood × Structure was found to be significant, $F(1, 748) = 9.243$, $\beta = -2.234$, $SE = .7346$, $t = -3.040$, $p = .002$, though it was difficult to interpret since its pairwise contrasts only provided non-significant trends. On the one hand, diverse trends appear for the possible effect of structure within each mood, but they fail to reach statistical significance; i.e., for indicative sentences,

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[13] See Cepeda (2016) for a study of EN in the context of punctual *hasta*-accomplishment clauses in Spanish. She considers the effects of the 'expletive' negative marker in the context of negative main clauses, and concludes that it negates that the eventuality in the main clause holds during the interval denoted in the *hasta*-clause.

It should be noticed that in our experimental study, on the one hand, the stimuli sentences contained only affirmative sentences (see the Appendix), and, on the other, the results provided a high proportion of non-negative readings for the negative marker in the subordinate clause.

sentences with *pas* obtained slightly more positive readings than sentences with *no* ($p =$ .058), but for subjunctive sentences, sentences with *no* alone obtained slightly more positive readings than sentences with the added *pas* ($p = .181$). On the other hand, the effect of mood within each structure was found to be significant and going in the same direction, i.e., subjunctive>indicative in both cases ($p = .001$ for *no* structures, and $p = .004$ for *pas* structures).

Four Pearson product-moment correlations were run to determine the relationship between subjects' age in years and the non-negative interpretations given to the four possible conditions under analysis (*no* + VIND, *no* + VIND + *pas*, *no* + VSUBJ, *no* + VSUBJ + *pas*). Interestingly, only one of the correlations was found to be significant, namely a positive correlation between age and non-negative interpretations attributed to *no* + VSUBJ structures ($r = .235$, $n = 94$, $p = .023$); that is, older speakers show higher amounts of expletive negation than younger ones. No correlation was found between the remaining three conditions (*no* + VIND [$r = .192$, $n = 94$, $p = .064$], *no* + VIND + *pas* [$r = .172$, $n = 94$, $p = .098$], *no* + VSUBJ + *pas* [$r = .014$, $n = 94$, $p = .896$]).

4.6. Summary

Our results show that, as expected, sentences without negative markers in the subordinate clause were almost always interpreted as positive. Also conforming to expectation, sentences with *no* and *pas* in the indicative mood were almost always interpreted as negative, except in the case of punctual *fins*-clauses. We conclude that sentences with the verbal EN triggers *em fa por* 'I am afraid' and *temo* 'I fear' provide more neat results in the evaluation of the meaning of subordinate clauses than sentences with the prepositional EN trigger *fins* 'until', which show unexpected positive readings in association with *no* and *pas* in the indicative mood.

Sentences with *no* and *pas* in the subjunctive are associated with a non-negative reading more often than sentences with *no* and *pas* in the indicative. Furthermore, our results of Experiment 1 show a non-conclusive potential negative reinforcer role for the presence of *pas*.

5. Experiment 2

Experiment 2 was a picture-matching task that aimed at testing how participants interpret the negative markers *no* and *pas* both in EN contexts and in preverbal NCI contexts, and whether a correlation could be found between these interpretations. That is, the goal of the experiment was to measure (i) the extent to which in EN contexts participants interpreted *no* as non-negative or as negative, (ii) the extent to which in NCI contexts participants interpreted *no* as non-negative or as negative (the non-negative reading of *no* here corresponding to a single negation interpretation of the entire clause, and the negative reading of *no* to a DN reading, i.e. an affirmative proposition), and (iii) the extent to which the added presence of *pas* influenced a single negation interpretation of the stimuli in EN contexts, or a DN interpretation in preverbal NCI contexts.

5.1. Participants

A total of 46 native speakers of Central Catalan who use Catalan on a daily basis (37 women and 9 men, mean age 23.16, SD=5.64) participated for pay in Experiment 2. Yet only the results of 45 participants were kept for statistical analysis, as one was excluded because (s)he failed 25 of our 48 controls items or fillers. Participants were mostly students at the Universitat Autònoma de Barcelona that reported currently living in what is usually known as the Central Catalan area and having lived there most of their childhood.[14] This sociolinguistic information was collected by means of a questionnaire that every participant completed at the end of the experiment.

5.2. Design and materials

The verbal materials for Experiment 2 comprised 96 stimuli: 32 criticals (4 conditions × 8 items), 32 controls (4 conditions × 8 items) and 32 fillers (16 positive sentences + 16 negative sentences). The four critical conditions included the following patterns:

1. EN triggers with *no* in combination with a transitive verb in the subjunctive mood:[15]

(14) Critical EN trigger *no* V
    Tinc por que els nens *no* estiguin encenent les espelmes.
    have fear that the children not are.SUBJ lighting the candles
    'I'm afraid that the children are lighting the candles.'

2. EN triggers with *pas* and a transitive verb in the subjunctive:

(15) Critical EN trigger *no* V *pas*
    Tinc por que els nens *no* estiguin *pas* encenent les espelmes.
    have fear that the children not are.SUBJ not lighting the candles
    'I'm afraid that the children are lighting the candles.'

3. Preverbal NCIs (either pronominal or DPs) with *no* in combination with a transitive verb in the indicative:

(16) Critical Pro/DP *no* V: 4 items with Pro and 4 items with DP.
    a. *Ningú no* està llegint un llibre.
      nobody not is reading a book
      'Nobody is reading a book.'

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[14] The sociolinguistic questionnaire served to eliminate an additional number of irrelevant speakers from other dialectal variants (3 North Occidental, 4 Valencian, 1 Balearic). The responses of these speakers were not included in our results.

[15] As mentioned above, only EN contexts that reliably allowed expletive readings of *no* were used in Experiment 2. Since Experiment 1 showed that subjunctive was seen to be a favoring factor, we kept only subjunctive stimuli.

b. *Cap* nen *no* retalla papers.
    no   child   not cuts   papers
    'No child is cutting papers.'

4. Preverbal NCIs (Pro or DP) with *pas* in combination with a transitive verb in the indicative:

(17) Critical Pro/DP *no* V *pas*: 4 items with Pro and 4 items with DP.
    a. *Ningú* *no* està *pas* llegint un llibre.
        nobody not is   not reading a   book
        'Nobody is reading a book.'
    b. *Cap* nen *no* retalla *pas* papers.
        no   child   not cuts   not papers
        'No child is cutting papers.'

    The four control conditions were designed to ensure that, as predicted by descriptive grammars, Catalan speakers:

1.   Give a single negation reading to sentences with a preverbal *no* and a postverbal NCI (either pronominal or DP):

(18) Control postverbal NCI with *no*: 4 items with Pro and 4 items with DP.
    Els   pescadors *no*   han   pescat *res*.
    the   fishermen   not   have   fished   anything
    'The fishermen did not fished anything.'

2.   Can produce DN readings in bi-clausal sentences with *no* in each clause:

(19) Control DN
    No   és veritat   que   els   convidats *no*   mengin.
    not   is true   that   the   guests   not   eat
    'It is not true that the guests are not eating.'

3.   Interpret preverbal NCI sentences without *no* as negative:

(20) Control subject NCI (Pro/DP) + V: 4 items with Pro and 4 items with DP.
    a. *Ningú*   llegeix   un   llibre.
        nobody reads   a   book
        'Nobody is reading a book.'
    b. *Cap* nen   retalla papers.
        no   child   cuts   papers
        'No child is cutting papers.'

4.   Interpret sentences without *no* under an EN trigger as positive:

(21) Control EN trigger V

> *Tinc por* que els nens estiguin encenent les espelmes.
> have fear that the children are.SUBJ lighting the candles
> 'I'm afraid that the children are lighting the candles.'

Finally, a set of 32 filler sentences (16 positive and 16 negative) was meant to distract the participants from focusing on the critical items. We introduced different sorts of DPs (definite and indefinite) in preverbal and postverbal positions.

In EN contexts, verbal stimuli were presented in association with a picture depicting characters considering an irrealis action. The action considered could be taking place or not, as illustrated in (22).

(22) Tinc por que els operaris *no* estiguin empenyent les caixes.
have.1SG fear that the workers not are.SUBJ pushing the boxes
Negative reading: 'I fear that the workers are not pushing the boxes.
vs.
'Non-negative reading: 'I fear that the workers are pushing the boxes.'

Thus for instance, in Figure 2, the picture represents a character considering a situation where workers are not pushing boxes that corresponds to the negative reading of (22).
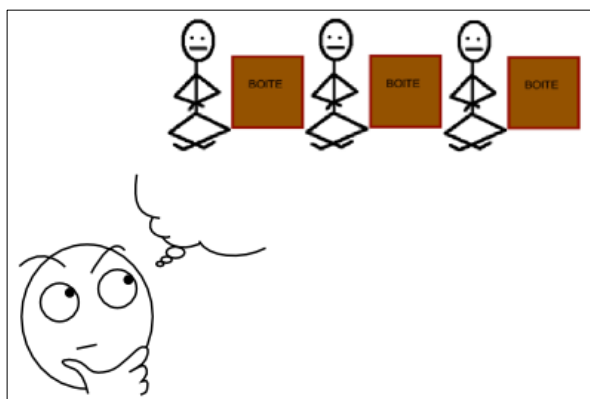

Figure 2. EN context: Picture showing someone considering that some workers are not pushing the boxes

For NCI contexts, the accompanying pictures also depicted characters performing an action or not, as illustrated in (23).

(23) *Ningú no* infla *pas* els globus.
nobody not inflates not the balloons
Single negation reading: 'Nobody is inflating the balloons.'

vs.

DN reading: Nobody is NOT inflating the balloons, i.e. 'Everybody is inflating the balloons.'

So, for instance, Figure 3 presents three characters blowing up balloons, which corresponds to the DN reading of (23).
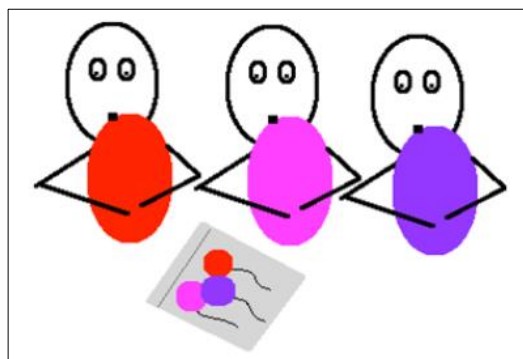

Figure 3. NCI context: Picture showing three people blowing balloons.

5.3. Procedure

Participants judged whether stimuli sentences were true or false relative to a given picture. For instance, if the sentence in (22) appeared together with the picture in Figure 2 above, participants attributing a negative meaning to *no* were expected to answer 'True', as the picture shows workers not pushing boxes. In contrast, speakers for whom *no* is non-negative would be expected to answer 'False' as the sentence has a positive interpretation in which workers are pushing boxes.

In NCI contexts, for a sentence like (23) appearing together with Figure 3, speakers interpreting *no* as non-negative are expected to answer 'False' as the sentence has a single negation reading, due to the meaning of the NCI. By contrast, speakers interpreting *no* as negative are expected to answer 'True' as the sentence is then computed with a DN reading that is equivalent to a positive.

Participants were tested individually in a quiet room at the Universitat Autònoma de Barcelona, in front of a desktop computer, as the experiment was administered using the E-Prime software. Participants received the following instructions about the task on screen before starting: "(i) First, a fixation point will appear which shows you the approximate height where a sentence will be displayed. Press the SPACE BAR to make the sentence appear. (ii) Read the sentence with attention and, once you have understood it, press the SPACE BAR again to make a picture appear. (iii) Press: "P" (GREEN key) if you consider that the picture is TRUE according to the meaning of the sentence; or "Q" (RED key) if you consider that the picture is FALSE according to the meaning of the sentence. Both the stimulus sentence and the picture remained visible on the screen until participants had evaluated their congruence. One of the experimenters was in the room

while participants were taking the experiment to make sure that they fully grasped what to do.

All 96 sentences were presented in a randomized fashion to each participant, in a *within*-subjects experimental design. The experiment lasted approximately 15 minutes.

5.4. Measures and analyses

A total of 4,320 true/false responses were gathered (45 participants × 96 sentences) corresponding to non-negative vs. negative interpretation in EN contexts, and single negation vs. DN interpretation in NCI contexts. The responses obtained were analyzed using GLMM through IBM SPSS Statistics 24. In addition, a series of Pearson correlations were computed in order to analyze whether or not there were responses that were subject-dependent (i.e. whether the same subjects that showed a specific response pattern in a specific condition also showed a correlated pattern in another condition).[16]

5.5. Results

We now turn to the results obtained in our critical conditions first in EN contexts and then in NCI contexts, with *no* on the one hand (EN trigger + *no* + V and NCI Pro/DP + *no* + V), and with *pas* on the other (EN trigger + *no* + V + *pas* and NCI Pro/DP + *no* + V + *pas*).

For EN contexts, as shown in Figure 4, a sentence with *no* was interpreted as negative 75% of the time, and non-negatively just 25% of the time. Recall that these sentences were all in the subjunctive. With the added co-presence of *pas* (i.e. EN trigger + *no* + V + *pas*) the same context types were interpreted negatively 64.17% of the time and non-negatively 35.83% of the time. It is particularly interesting to note that the percentage of single negation readings diminishes with the presence of *pas* or, in other words, that the non-negative reading increases when *pas* is added to *no* in the scope of an EN trigger. This is a surprising result in view of the presumed negation reinforcing role of *pas* and the results obtained in Experiment 1, but −as will become clear in Figure 5− it is in consonance with the result obtained in NCI contexts: *pas* behaves as a negative polarity item under the scope of *no*.

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[16] Reaction time measures were also extracted to record the amount of time that it took subjects to evaluate the congruence between the picture and the interpretation of the sentence, but the analysis of the results has been left for further research.
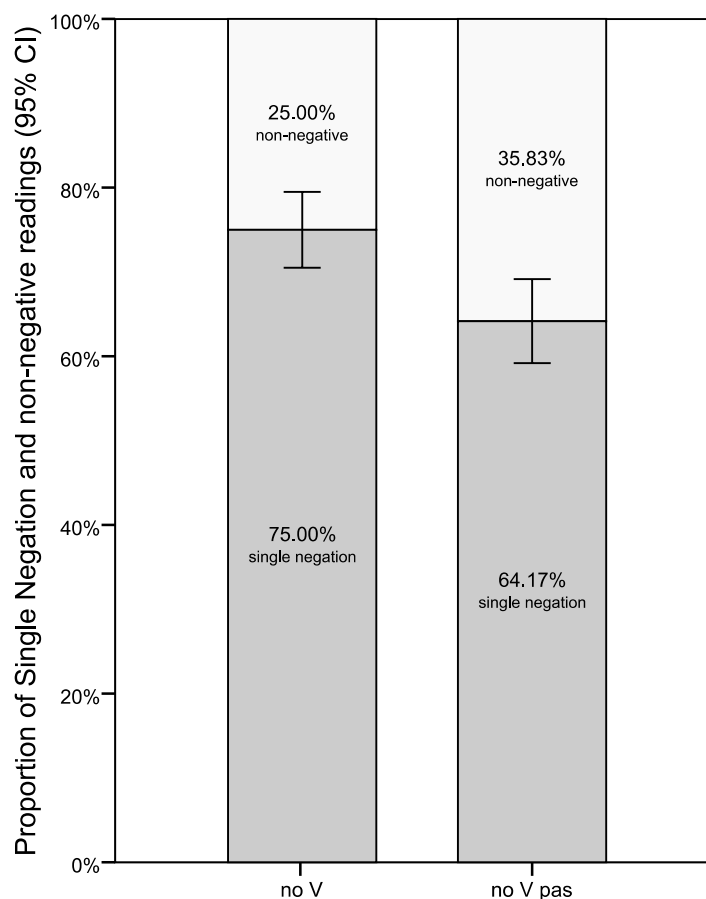
Figure 4. Percentage of single negation and non-negative readings for critical conditions EN trigger + *no* + V and EN trigger + *no* + V + *pas* in EN constructions

In relation to Figure 4, it is interesting to note that some results of Experiment 2 for the interpretation of *no* in EN contexts are similar to those obtained in Experiment 1. In particular, in Experiment 2, sentences with *no* in the context of EN verbal triggers were interpreted as non-negative 25% of the time, and 22% of the time in Experiment 1. This striking consistency suggests that despite the relatively low percentage of expletive readings obtained in both experiments, this type of interpretation is well attested and stable.

Although this outcome is perfectly compatible with an optional negative interpretation of *no* in EN contexts, as reported in traditional grammars of Catalan, based on the intuitions of the native speakers among the authors, we had expected that the amount of non-negative readings in the critical condition EN trigger + *no* + V would have been larger, nearing 50%, to indicate true optionality. This expectation stemmed from the fact that the potential ambiguity of *no* between a logical negation operator and a non-negative element is also acknowledged in traditional and descriptive grammars of Catalan.

For NCI contexts, Figure 5 shows that our participants interpreted the pattern Pro/DP + *no* + V as single negation most of the time (76.39%), and with a DN interpretation a non-negligible amount of time (23.61%). Recall that these sentences were all in the

indicative. With the added co-presence of *pas* (i.e. Pro/DP + *no* + V + *pas*), the same sequences were interpreted as single negation 86.39% of the time and with DN interpretation only 13.61% of the time. Notice that, interestingly, although surprisingly in view of the presumed negation reinforcing role that *pas* has been assumed to play in the literature, the presence of *pas* here diminishes the percentage of DN readings to a percentage close to that of control DN. This result supports the hypothesis that *pas* is compatible with a negative reading, but does not strengthen it, which suggests that *pas* is a negative polarity item under the scope of an anti-veridical operator *no*. Therefore, its presence does not increase the proportion of DN readings, hence suggesting that it is non-negative.
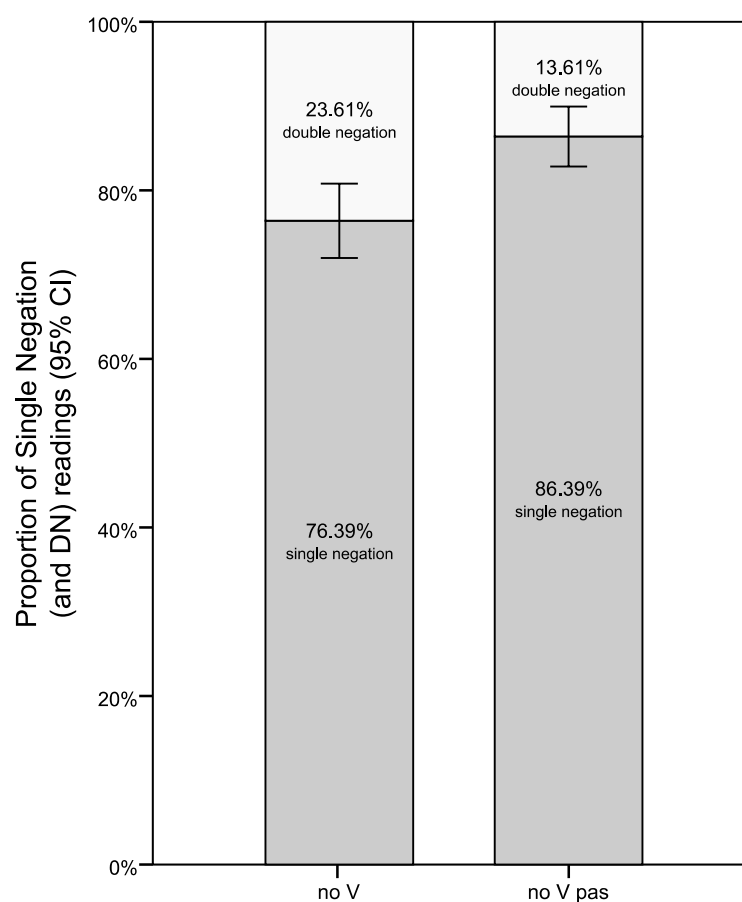

Figure 5. Percentage of DN and single negation readings for critical conditions subject NCI (Pro/DP) + *no*+ V and subject NCI (Pro/DP) + *no* + V + *pas* in NC constructions

These results suggest that the presence of *pas* had the effect of weakening the interpretation of *no* as negative, as it decreased the amount of DN chosen. As we discuss later, this result appears to go against the simple standard view of the role of *pas* as a reinforcer of negation. Instead, our results favor interpreting *pas* in NCI contexts as supporting a non-negative meaning of *no*, which is particularly interesting because this is

not an effect for *pas* that can be straightforwardly expected from the well-known Jespersen's Cycle (Jespersen 1917).

A GLMM was applied to the results of the first two triggers of Experiment 2. The model was defined with Participant × Action (the action depicted in the trial picture) as the subject structure, and Context (NCI, EN) × Structure (*no* + V, *no* + V + *pas*) as the repeated measures structure (Covariance Type: Diagonal). The participants' interpretation of the sentences was set as the dependent variable (Binomial distribution, Logit link). The fixed factors were Context, Structure, and their interaction. Regarding the random factors, a random intercept was set for Participant, with random slopes over the three defined fixed factors (Covariance Structure: Variance Components). A main effect was found for Context, $F(1, 1436) = 6.017$, $\beta = -1.696$, $SE = .4094$, $t = -4.143$, $p = .014$, such that less single negation readings were found in EN contexts compared to NCI contexts ($p = .019$) in all structures (*no* + V, *no* + V + *pas*). However, Structure was not found to be significant, $F(1, 1436) = .253$, $\beta = -.698$, $SE = .1992$, $t = -3.505$, $p = .615$, indicating than sentences with *no* and sentences with *no…pas* obtained a similar number of negative readings over the two types of contexts ($p = .615$). The interaction Context × Structure was found to be significant, $F(1, 1436) = 29.297$, $\beta = 1.556$, $SE = .2876$, $t = 5.413$, $p < .001$, which can be read as follows. For EN contexts (Figure 4) sentences with *pas* obtained more non-negative responses than the ones with only *no* ($p = .001$). Conversely, for NCI contexts (Figure 5) sentences with *no* alone obtained more DN interpretations than they did with *pas* ($p = .002$).

The tendency towards a non-reinforcing contribution of *pas* is confirmed by the statistically significant Pearson correlation found between the interpretation that our participants attributed to items illustrating the critical condition NCI Pro/DP + *no* + V, and the interpretation they assigned to items corresponding to the same condition with *pas*. In other words, if participants interpret a stimulus with the NCI DP/Pro + *no* + V pattern with a single negation, this interpretation increased with the addition of *pas*, i.e. when the pattern was NCI Pro/DP + *no* + V + *pas* ($r^2 = .774$, p<.001). Likewise, there is also a statistically significant correlation between the single negation interpretation given to the critical condition EN trigger + *no* + V and to EN trigger + *no* + V + *pas* ($r^2 = .734$, p<.001). In sum, similarly to what happens in the case of *no* and *pas* in NCI contexts, if participants tended to interpret the EN trigger + *no* + V pattern as containing a non-negative variant of *no*, they did so even more with the added co-presence of *pas*, i.e. with the EN trigger + *no* + V + *pas* pattern. In short, in both contexts, *pas* is seen as having the same effect: it is a mere polarity item under the licensing effects of either an anti-veridical or a non-veridical operator.

Table 3 shows the percentage of errors in controls and fillers. If considered separately, the percentage of errors in fillers decreases to 4.65%, and the percentage of errors in controls increases to 5.69%. This increase is largely due to the double negation control, which shows 14.72% of error, in comparison to the percentage of error in control NCI (*no* + V + Pro/DP) or in control NCI (Pro/DP + V), at 1.67% and 2.78%, respectively. We attribute this difference to the fact that the DN control stimuli involved processing two negative clauses, a main and a subordinate one and it was clearly the most demanding structure in the non-critical stimuli. An overall percentage of error in controls and fillers

of 5.17%, however, allows us to conclude that these unambiguous items worked as expected.

Conditions	% of errors	SD
Control NCI (*no* + V+ Pro/DP)	1.67	12.82
Control NCI (Pro/DP + V)	2.78	16.46
Control DN	14.72	35.48
Control EN (EN trigger + V)	3.61	18.68
All controls	5.69	23.18
Fillers	4.65	21.07
Controls and fillers	5.17	22.15

Table 3. Percentage of error in controls and fillers

Concerning now the speaker variability on the interpretation of *no* in EN contexts, it should be highlighted that in the critical conditions EN with *no* + V (+ *pas*), no participants interpreted all 16 items with a non-negative interpretation: 11 participants interpreted between 9 and 14 non-negative readings, and 34 participants interpreted between 0 and 7 non-negative readings. This shows that, for all participants, there were at least some items in EN contexts that they interpreted negatively. This is shown in Figure 6, where columns represent the number of participants (vertical axis) that chose non-negative readings from 0 to the full 16 possible times (horizontal axis).[17]

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[17] Notably, individual results also show that only one participant interpreted the sequence EN trigger + *no* + V + *pas* as non-negative all the time.
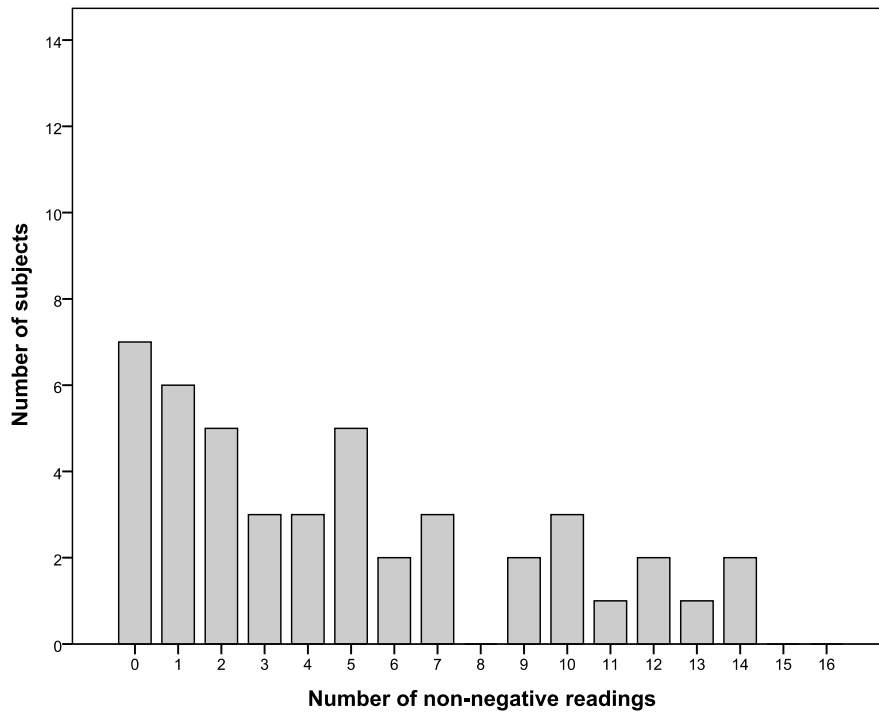
Figure 6. Number of non-negative readings (x-axis) given by subjects (y-axis) to the 16 stimuli EN triggers + *no* + V and EN triggers + *no* + V + *pas*

Considering participant data, let us now consider in more detail the interpretation that participants assigned to simple transitive sentences consisting of an NCI in preverbal position followed by *no* or *pas*. Figure 7 can be interpreted as suggesting that there are possibly two populations with respect to the number of DN readings attributed to subject NCI + *no* + V + (*pas*). While a total of 14 participants (population 1) never attributed a DN reading to subject NCI + *no* + V + (*pas*) sequences, the remaining 31 participants assigned them at least some DN readings, though in variable amounts (from 1 single occasion to 15 times out of the 16 that the experiment contained).
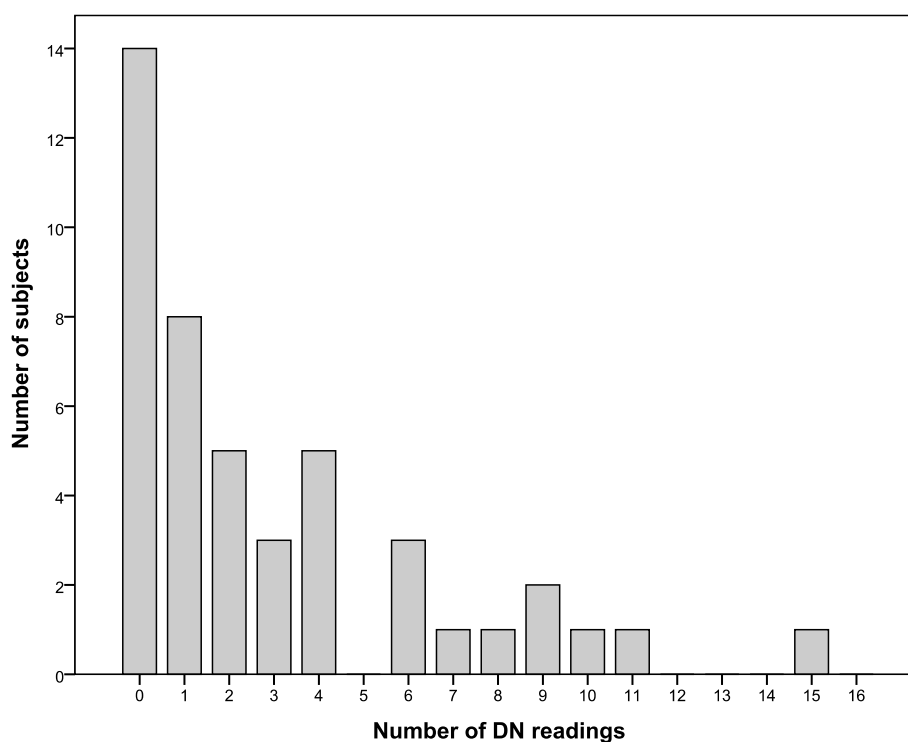
Figure 7. Number of DN interpretations (x-axis) given by subjects (y-axis) to the 16 stimuli subject NCI (Pro/DP) + *no* + V + (*pas*)

Finally, recall that Experiment 2 aimed at investigating whether a correlation could be found between the non-negative interpretation of *no* and *pas* in EN contexts and the persistence of a single negation interpretation in NCI contexts. In other words, what mattered for our initial research was to consider whether or not a correlation could be found between the percentage of non-negative readings that speakers had in EN contexts and the percentage of single negation readings they allowed in NCI contexts both in *no* +V and *no* + V + *pas*. This is considered in Figure 8 for the 45 participants in our study. Figure 8 shows that there were two tendencies in the responses: a tendency to provide a single negation reading to NCI contexts (i.e., bubbles are skewed to the right in the *x*-axis), and a tendency to provide a non-negative reading to EN contexts (i.e., bubbles are skewed to the bottom in the *y*-axis); however, the bubbles do not display a linear correlation. That is, the percentage in single negation readings in NCI contexts does not allow one to predict the percentage of non-negative readings in EN contexts. As it turned out, no statistically significant correlation was found ($r = .241$, $n = 45$, $p = .111$). This result points at the need to consider the two phenomena under study, namely the non-negative reading of a potentially negative clause in EN contexts and the single negation reading in sentences with preverbal NCIs with *no*, as unrelated.
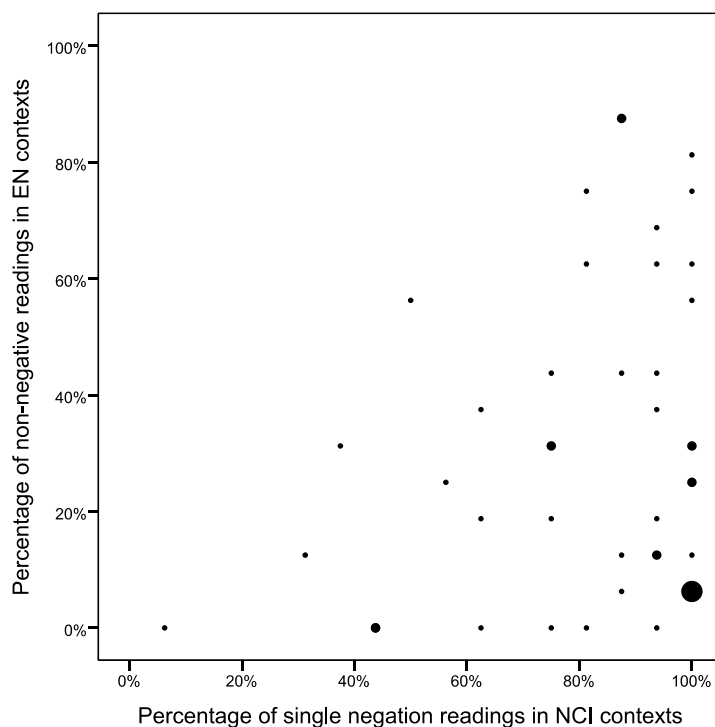
Figure 8. Bubble chart depicting the relationship between the percentage of single negation readings in NCI contexts (*x*-axis) and the percentage of non-negative readings in EN contexts (*y*-axis) both in *no* +V and *no* + V + *pas*. The size of the bubbles represents the number of subjects providing similar results (small = 1 subject; medium = 2 subjects; large = 5 subjects).

Still, it is the case that when we consider the interpretation of items with *no* (and *pas*) of these 45 speakers 35.6% (13.3% with *pas*) allow EN readings in different proportions and no DN, 31.1% (42.2% with *pas*) allow different proportions of both EN and DN, 20% (35.6% with *pas*) allow no EN but some DN, and 13.3% (8.9% with *pas*) do not show EN nor DN.

5.6. Summary

This experiment has shown that in EN contexts a negative interpretation for sentences with *no* and with *pas* is preferred over a non-negative one, thus showing that the phenomenon known as expletive negation by which a marker such as *no* is interpreted non-negatively is less common than what would follow from the true optionality that traditional grammars of Catalan describe. In NCI contexts a single negation interpretation is also preferred for sentences that feature a preverbal NCI and a doubling *no*, and this preference is maintained when *pas* is added to the mix. Our results also show that *pas* behaves in an unexpected way for a reinforcer or strengthener of negation: while in EN contexts *pas* increases non-negative readings, which are associated with an expletive variant of *no*, in NCI contexts *pas* diminishes the percentage of DN, which would presumably follow from the combination of a negative *no* and a negative NCI. Finally,

no statistical correlation was found between participants' preference for non-negative readings in EN contexts and for single negation readings in contexts of doubling *no* with preverbal NCIs.

6. Discussion

For the analysis of the results presented in Sections 4 and 5 we assume that NCIs are lexically ambiguous between polarity items and negative quantifier expressions (Herburger 2001, Espinal and Tubau 2016a,b), and that *no* is also ambiguous between a negative operator and a polarity item (Longobardi 2014, Espinal and Tubau 2016a). Following Déprez et al.'s (2015) empirical support for a microparametric approach to the lexical ambiguity of NCIs and the possible ambiguity of *no* in Catalan, we take NCIs and the negative marker to be characterized as in Table 2.

NCIs	Negative markers
1. [+σ], [uNeg]	1. ¬,[iNeg]
2. ¬∃, [iNeg, uFoc]	2. [+σ]

Table 2. Lexical variation in NCIs and the negative marker in Catalan

The idea expressed in this table is that there are two competing lexical variants of NCIs in Catalan: a polarity variant (characterized with the semantic feature [+σ], which forces the consideration of alternatives, Chierchia 2006, 2013, and the syntactic feature [uNeg], necessary for NC, Zeijlstra 2004), and a negative existential quantifier variant (semantically characterized ¬∃, endowed with the syntactic features [iNeg, uFoc] that guarantee its distribution in preverbal position with a negative interpretation). In Déprez et al. (2015) it is argued that for one population of speakers the quantifier variant of NCIs is only emergent, but for another population of speakers both variants are accessible, which guarantees that in combination with a negative operator, either a single negation reading (characteristic of NC structures) or a DN reading are available.

This table also presents an ambiguity associated with the negative marker: it may either correspond to the negative operator ¬, which is syntactically characterized with the feature [iNeg], or to an expletive marker, characterized as a polar item, a variant that is claimed to be regressive in the language.

With these options in mind let us now go back to the research questions that were the focus of this study.

As stated in Section 3, one of the research questions that we aimed at addressing in this paper was the extent to which Catalan speakers associated a negative or a non-negative reading to the marker *no* in EN contexts with a subordinate clause in the subjunctive mood. Our results clearly show that participants prefer a negative interpretation of *no* in the subordinate clause of EN verbal triggers both in Experiment 1 and in Experiment 2. Recall that in Experiment 1 88% of negative interpretations vs. 22%

of non-negative interpretations with EN verbal triggers were obtained. Likewise, in Experiment 2, 75% of single negation interpretations vs. 25% of non-negative interpretations were obtained.

In both experiments, the amount of non-negative readings of *no* in EN contexts is much lower than would be expected in the light of the optionality of expletive negation in EN contexts postulated in traditional grammars of Catalan. This result confirms the claim (Déprez et al. 2015) that the phenomenon of EN is not salient and that the presence of a polarity variant of *no* is regressive in this language; that is, of the two lexical variants postulated for *no,* namely a negative one and a non-negative one, the former seems to be much more accessible to the speakers of Catalan than the latter.

In principle, an alternative explanation of the results obtained would be to assume, in line with Espinal (1992, 2000, 2007), that *no* is a regular negative marker in all contexts, including those with EN triggers, with an LF syntactic process of negative absorption being responsible for the loss of the negative meaning of *no* under specific syntactic conditions. It is beyond the scope of this paper to discuss the precise nature of such an operation of negative absorption, but notice that our results show that this syntactic operation would apply much less often than expected, since negative readings of *no* are more widely attested than non-negative ones in EN contexts. This is indeed problematic. An additional shortcoming of this approach is that syntactic operations are not expected to be optional.

In short, while our experiments do not offer any conclusive evidence as to what the source of the non-negative interpretation of *no* in EN context is −either lexical or syntactic−, they have nonetheless the merit of revealing that the optionality standardly assumed in traditional descriptive grammars of Catalan is only apparent in the current rather young Catalan student population constituting the core of our sample. In the absence of any explicit discursive context that may bias participants towards one reading or another, there is a clear preference for *no* having a negative meaning even in recognized EN contexts. We interpret that these results follow from grammar competition (Kroch 2000) between two variants of a lexical item with different feature specifications: $no_{[iNeg]}$ (sentential negative marker responsible of NC) and $no_{[+\sigma]}$ (polar item), and we conclude that the preference for a negative reading of *no* in EN contexts is better explained under the assumption that the negative variant of *no* ($no_{[iNeg]}$) is more accessible to native speakers.

Concerning our second research question, namely to what extent, if at all, the alternation between a negative and non-negative interpretation in EN contexts could relate to the meaning of the marker *no* that optionally doubles preverbal NCIs in Catalan, the results of our Experiment 2, run with 45 university students who are native speakers of Central Catalan, have shown that there is no significant statistical correlation between a high proportion of expletive readings of *no* in EN contexts and a high proportion of single negation readings of *no* in NCI contexts. Recall, however, that there is high variability among speakers with respect to how they interpret *no* in EN and NCI contexts: 35.61% of the participants gave EN readings and no DN readings, 31.1% gave both EN and DN readings, and the rest gave no EN readings and no DN readings, or DN readings but no EN readings.

Since no statistical correlation was found between the preference for single negation readings in NCI contexts (presumed to feature a non-negative *no*) and participants' preference for non-negative readings in EN contexts (potentially composed with a non-negative *no* too), it seems reasonable to entertain that the *no* variant selected in NCI contexts be mainly the negative operator, which is also the preferred variant of speakers in EN contexts.

This outcome has important theoretical implications for the formal characterization of the system of Negative Concord in Catalan: as will be discussed next, our findings go against Zeijlstra's (2004) assumptions for this language. In the Central Catalan variety that is the focus of this paper, *no* can optionally co-occur with preverbal NCIs. Van der Wouden and Zwarts (1993), as well as Zeijlstra (2004), interpret this optionality as a case of dialectal variation and postulate two distinct varieties of Catalan, namely Catalan I and Catalan II. Recall that, in Catalan I, the presence of the sentential negation marker *no* is assumed to be obligatory, as in Strict NC languages such as Romanian or Greek, and to lead to a constant single negation reading. By contrast, in Catalan II, the presence of the sentential negation marker *no* with preverbal NCIs is essentially disallowed, and when enforced, should lead to an obligatory DN interpretation, as has been observed for Non-Strict NC languages such as Spanish and Italian. In terms of formal features, while *no* in Strict NC languages is characterized as semantically non-negative, *no* in Non-Strict NC languages is characterized as semantically negative.

The problem with this hypothesis is that the existence of the predicted two varieties of Catalan, namely one in which preverbal NCIs require an obligatory *no*, and another where they preclude it, is not supported by empirical evidence (Déprez et al. 2015). Rather, for a significant population of Central Catalan speakers the use of *no* with preverbal NCIs freely alternates. In other words, if *no* is not obligatory with preverbal NCIs, then a Strict NC variety of Catalan cannot be said to exist. But, a Non-Strict Catalan II variety does not exist either, since it is not the case that a consistent group of speakers exists for whom DN is the only choice for preverbal NCIs followed by *no*.

Now, if single negation is the preferred interpretation of the sequence preverbal NCI + *no*, the next question we have to address is what are the consequences of this outcome for a theory of NCIs. Recent empirical studies by Déprez et al. (2015) have supported the assumption that lexical variation exists for NCIs in Catalan. These can be of a polar nature (i.e. non-negative), hence engaging in a licensing relation with a negative *no* that results in a single negation reading, or fully negative (Espinal & Tubau 2016a,b), and hence leading to DN when co-occurring with the negative marker *no*. Under this view, the amount of DN attested in Experiment 2 in sequences containing a preverbal NCI + *no* + V (23.61%) can be analyzed as the result of combining a negative NCI with a negative *no*. Very interestingly, this percentage is similar to the amount of DN (24.29%) that was obtained in Déprez et al. (2015) in the very same syntactic pattern with a different set of participants and experimental design. Single negation readings of the sequences containing a preverbal NCI + *no* + V, by contrast, would follow from the combination of a polar (i.e. non-negative) variant of the NCI.

As we know independently that certain kinds of negative polarity items (NPIs) (e.g. in Hindi, according to Lahiri 1998) require licensing by negation even if they occur in a

preverbal position, it is possible to hypothesize that Catalan NCIs of the polar kind may allow licensing by a negation that does not c-command them at Spell-Out, but at some prior stage in the derivation or after reconstruction. Such a proposal, which is in line with work by Martins (2000) and Déprez (2000) among others, was already suggested as a possibility to account for the results obtained in Déprez et al. (2015). According to these authors, it should not be assumed that the surface c-command condition that seems to operate for English-type NPIs (according to which they should be c-commanded by a negation in the position they are finally pronounced) extends to all NPI expressions. Actually, Déprez et al. (2015: 103) argue that it is possible that for Catalan NCIs "c-command by negation of one of their copies –not necessarily the final Spell-Out one– could be sufficient for licensing." Additionally, as it is independently hypothesized that preverbal subjects are first-merged in a *v*P-internal position (*v*P-internal Subject Hypothesis, Koopman and Sportiche 1991), a negation in TP could license them under c-command before they move to a preverbal position outscoping negation.

Alternatively, the preferred single negation reading that is observed in NCI contexts (Fig. 5) can also be composed by combining a negative preverbal NCI and a non-negative *no*. This option, however, would only be available to those speakers who can interpret *no* as non-negative in EN contexts to some extent.

The two derivations that can result in a single negation reading of a sequence of a preverbal NCI + *no* in Central Catalan are represented in (24a, b). The derivation that results in the non-negligible amount of DN readings obtained in Experiment 2 is given in (24c).

(24) a. [TP NCI [NegP no[iNeg] [T' [T [vP <NCI>[uNeg] V [VP…]]]]]] (polar NCI, negative *no*)

$$\text{c-command}$$

(Déprez et al. 2015: 103)

    b. [TP NCI[iNeg, uFoc] [NegP no[+σ] [T' [T [vP <NCI> V [VP …]]]]]] (negative NCI, polar *no*)

    c. [TP NCI[iNeg, uFoc] [NegP no[iNeg] [T' [T [vP <NCI> V [VP …]]]]]] (negative NCI, negative *no*)

We, therefore, conclude, as an answer to the second research question that the preferred single negation reading of NCI + *no* + V can be accounted for by an operation of Negative Concord between a negative operator *no* specified [iNeg] and a non-negative NCI specified [uNeg]. Under this combination NCIs are semantic polarity items.

Yet, in order to account for the optionality of *no* with preverbal NCIs, it must be possible to derive the single negation meaning by means of the derivation in (22b). That is, the combination of a negative NCI with a polar *no* cannot be excluded in the grammar of Catalan. In fact, the optional presence of a preverbal *no* is one of the factors that make our participants (all Catalan and Spanish bilinguals) activate the grammar of Catalan, in which the percentage of DN readings for NCI + *no* + V is, contrary to Spanish,[18] rather low. Given this result and given that preverbal NCIs may also correspond to negative

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[18] See Etxeberria et al. (forthcoming).

existential quantifiers, we conclude that the optionality of *no* in NCI contexts is due to the fact that *no* is ambiguous.

Turning now to our third research question, namely what the effect of *pas* is in the interpretation of negative sentences, our experimental investigation raises very interesting results. Recall that, as stated in Section 3, it was predicted that if *pas* is a reinforcer of negation (a role usually attributed to *pas* in traditional descriptive grammars of Catalan), it should increase the amount of single negation that our participants interpret in EN contexts (as it would be reinforcing a negative *no*), and the amount of DN that they interpret in NCI contexts (also under the assumption that the negative marker *no* is negative and preverbal NCIs can optionally be negative too). In Experiment 1, which only dealt with EN contexts, *pas* behaved as expected, showing a tendency to receive more negative interpretations in EN contexts than stimuli with *no*. The difference between *no* and *no…pas* in the subordinate clause of verbal triggers is, however, not statistically significant. By contrast, in Experiment 2, non-negative readings of *no* increase in EN contexts when *pas* co-occurs with *no* (Fig. 4), and DN readings decrease in NCI contexts when *pas* is added (23.61% of DN without *pas* vs. 13.61% of DN with *pas*) (Fig. 5).

Before we account for these differences, a methodological distinction should be pointed out between Experiments 1 and 2. In Experiment 1 for each evaluated sentence participants had to choose on-line one of two interpretations presented in a written form. In Experiment 2 for each evaluated sentence participants, by contrast, had to choose the picture that best represented the meaning of the sentence. On the one hand, the two groups of participants were different. On the other, it could well be that the reactions to written and visual stimuli be different too.

The reader should also consider the fact that *pas* in our data introduces a second crucial difference between Catalan and Spanish. *Pas* is not part of the Spanish lexicon. Given that our participants are variably bilingual in Catalan and Spanish, the presence of *pas* in the stimuli could have the effect of activating a grammar (of Catalan) where a single negation reading is the default interpretation.

We account for the role of *pas* in the following terms. We assume that the lexical entry of *pas* in Central Catalan has two components: it is a negative polarity item that semantically constrains the implicatures that can be drawn from an accessible discourse context (Espinal 1993, 1996). This characterization accounts for its distribution (under the c-commanding scope of an overt *no*) and its apparent emphatic metalinguistic content (Batllori 2016).

In the light of our data one should conclude that the assumption that *pas* is a strengthener of negation cannot be correct: it is not the case that the presence of *pas* shifts the interpretation of *no* from non-negative to negative in EN contexts, and from single negation to DN in NCI contexts. Since this would certainly raise a problem for a standard interpretation of the Jespersen's Cycle, we need to be cautious about the role of strengtheners or reinforcers. Linguistically speaking, our results are only compatible with the hypothesis that *pas* in Central Catalan is a negative polarity item. While negative *no* is characterized as [iNeg], *pas* is to be characterized as a polar item ([+σ] [uNeg]), interpreted under the scope of the negative operator; *no* + V + *pas* is, then, an example of a Negative Concord construction. If *no* is non-negative (i.e. expletive), polar *pas* will be

licensed under the scope of a negative NCI (NCI + *no* + V + *pas* is also an example of a Negative Concord Construction), or under the scope of an EN trigger.

If *pas* is a polar item, the question that still needs to be accounted for is the unexpected increase of non-negative readings observed in Figure 4, and the increase of single negation readings observed in Figure 5. We would like to conjecture that this behavior is due to the fact that –in the absence of discourse contexts– our participants could not activate the second component of the lexical meaning of *pas*, namely its metalinguistic or emphatic meaning, and therefore it is merely interpreted as a polarity item licensed by the presence of a trigger (a non-veridical EN trigger or the negative operator in the case of EN contexts; a negative NCI or a negative *no* in the case of NCI contexts).

This hypothesis supports Schwenter's (2006) conclusion that the Jespersen's Cycle needs to be 'fine-tuned' to successfully account for the development of negative markers in a number of languages. In particular, he argues in favor of the need to incorporate information-structure considerations in the account of diachronic change from the stage where emphatic negative markers are optional (i.e., the situation in contemporary Central Catalan), to the stage where non-emphatic negative markers are obligatory (the situation in contemporary French). For Catalan, he claims that *pas* is licensed "only when there is a denial of a salient discourse-old proposition" (Schwenter 2006: 9), a position close to Espinal (1993). Our participants, however, evaluated the experimental stimuli in the absence of any explicit pragmatic factors of the kind Schwenter argues as crucial for the licensing of an element like *pas*. Hence, our results may not be that unexpected after all: if Schwenter is right in his claim that *pas* is not just a reinforcer of negation, but one which performs its role when certain discourse conditions are met, the lack of these conditions should lead to results different from the ones that would probably be obtained in contexts of social interaction.

To sum up, our unexpected results on *pas* can be interpreted as providing support for Schwenter's claim that the notion of reinforcement must be taken with far more caution than usually assumed, and should be checked in the future in conversational turn-taking interactions.

7. Conclusion

In the present paper we have experimentally investigated (i) the extent to which and why Catalan speakers attribute a non-negative or a negative meaning to *no* and *no…pas* in the context of an EN trigger and in the context of preverbal NCIs; (ii) to what extent the alternation between a negative and a non-negative interpretation of *no* in EN contexts relates to the meaning of the negative marker that optionally co-occurs with preverbal NCIs; and, finally, (iii) what the effect of adding *pas* to *no* in EN contexts and NCI contexts is.

In connection to the first question, we have shown that EN is less widespread than described in traditional grammars of Catalan. That is, speakers prefer a negative interpretation of *no* to a non-negative one. This is unexpected from the traditional grammar point of view, which considers expletive *no* as optional. Our results suggest that

EN is a recessive construction in Catalan. We have argued that such a construction results from lexical variation of the negative marker *no*, which can be negative or non-negative, and have dismissed the possibility that a grammatical process of logical absorption transforms a negative *no* into a non-negative one on theoretical grounds.

Concerning the second question, our results have shown that the negative marker *no* that is used in doubling NCI contexts is most often negative, as there is no statistical correlation between the preference for single negation readings in NCI contexts and the preference for non-negative readings in EN contexts. Such a correlation would be expected if *no* were of the same kind in both contexts. However, we cannot reject completely the possibility that single negation readings in NCI contexts be composed by means of a negative NCI and a non-negative marker. This option, which would be available only to those speakers who have proven to be able to interpret *no* expletively to some extent, would explain why *no* is optional in NCI contexts.

Therefore, we have discussed that an analysis of preverbal NCI + *no* + V sequences à la Zeijlstra (where *no* is always non-negative) cannot be right for Catalan. Rather, an analysis of a negative *no* that interacts with lexically ambiguous NCIs seems to capture our results much better. In other words, if NCIs in Catalan are predominantly non-negative, but occasionally negative (Déprez et al. 2015), when they co-occur with a negative *no* two outcomes are possible: single negation if the NCI is non-negative and *no* is negative, and DN if both the NCI and *no* are negative. In the former case, we have assumed that licensing of NCIs is possible if preverbal NCIs can reconstruct to their first-merged position at the edge of the *v*P.

Finally, with respect to the third research question, we have shown that in the absence of overt contextual information *pas* is not a reinforcer of negation in the traditional sense. We have reached this conclusion after analyzing the diminishing effect of *pas* both for single negation readings in EN contexts, and DN readings in NCI contexts. In EN contexts, the added presence of *pas* decreases the amount of negative readings, and hence, surprisingly appears to increase the amount of non-negative readings. In NCI contexts, the added presence of *pas* decreases the amount of DN readings and hence seems to increase the amount of single negation readings. This behavior is unexpected for a proper reinforcer of negation and, in line with Schwenter (2006), points at the need to revise our standard assumptions about the role of negation reinforcers, the role that negative reinforces are assumed to play within the well-known Jespersen's Cycle, and the role that discourse factors play in the interpretation of emphatic polarity items. Concerning the nature of Central Catalan *pas*, we have analyzed it as a negative polarity item that must occur under the scope of *no*, and can be licensed either by this *no* (negative or non-negative), an NCI (negative or non-negative), or an EN trigger. We have shown that *pas* cannot shift from EN to single negation in EN contexts, and from single negation to DN in NCI contexts. Hence, *pas* cannot be claimed to be a strengthener or reinforcer of negation. This does not exclude, however, that the lexical entry for *pas* has a second component that constrains its metalinguistic or emphatic meaning, which can only be activated when the speaker has access to discourse information.

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