

Double negatives and intonation in Dutch

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Abstract: Dutch qualifies as a double negation language, but single negation readings are found in certain environments, under conditions that are not well understood. The combination of corpus research and a production experiment carried out in this paper reveals a surprising amount of variation, and points towards a subtle interplay of lexical factors (choice of negative expression and combinations thereof), syntactic factors (word order and adjacency), and prosodic factors (pitch accent on first/second negative) in Dutch sentences with multiple negative expressions.

1. Introduction

Languages like English and Dutch are known as double negation languages, that is, the combination of two negative expressions (*niet* 'not', *niemand* 'nobody', *nooit* 'never', *nergens* 'nowhere) generally leads to a double negation interpretation ($\neg\neg p$), as illustrated in (1):

- (1) a. Ik heb niet niemand gezien. [Dutch]
I have not nobody seen
'I have not seen nobody.' (i.e. I have seen at least somebody.)
b. Niemand heeft niets gezegd.
Nobody has nothing said
'Nobody said nothing.' (i.e. Everybody said something.)

Other languages in the world (including, but not restricted to Italian, Greek, Russian, Hungarian,..) are negative concord languages, in which the combination of two seemingly negative expressions leads to a single negation interpretation of the sentence ($\neg p$) (Ladusaw 1992, van der Wouden & Zwarts 1994). Examples are in (2):

- (2) a. No he visto a nadie. [Italian]
Not have seen nobody
'I have not seen anybody.'
b. Nessuno ha visto niente.
Nobody has seen nothing
'Nobody has seen anything.'

The negative expressions in (2) are dubbed *n-words*, because they contain a morphological negation, yet they do not contribute multiple negations in combination. Languages like English and Dutch typically use existential negative polarity items in such environments. In early and influential work, Ladusaw (1979) and Zwarts (1986) highlight the relevance of examples like (3):

- (3) a. Nobody has seen anything.
 b. Niemand heeft ook maar iets gezien [Dutch]
 Nobody has NPI something seen
 'Nobody has seen anything.'

Although the contrasts are typologically strong, a closer investigation of negative concord languages (henceforth: NC) reveals that many of such languages also use negative polarity items (cf. Fauconnier 1975 for an early investigation of French). Moreover, a sequence of *n-words* sometimes allow double negation readings (henceforth: DN) (de Swart & Sag 2002, de Swart 2010). The combination of the French negative marker *pas* leads to an obligatory DN interpretation in contexts like (4a), whereas the DN reading of (4b) (from Corblin 1996) is optional, but pragmatically favoured:

- (4) a. Ce n'est pas rien. [French]
 It SN is SN nothing
 'It is not nothing.'
 b. Personne n'est le fils de personne.
 Nobody SN is the son of nobody.
 = No one is the son of anyone. [NC]
 = Everyone is the son of someone. [DN]

If negative concord languages sometimes allow double negation readings, it might be the case that double negation languages tolerate negative concord readings under certain circumstances as well. Zeijlstra (2010) identifies what he calls 'emphatic multiple negative expressions' (EMNEs) in Dutch. Some of his examples are in (5):

- (5) a. Zij heeft nergens geen zin in. [Dutch]
 She has nowhere no lust in
 'She doesn't feel like anything at all.'
 b. Hij gaat nooit niet naar school.
 he goes never not to school
 'He never ever goes to school.'

- c. Zij hebben nooit geen geld.
 they have never no money
 'They never have any money.'

Although the sentences in (5) have a syntax similar to those in (1), they get the kind of interpretation we know from negative concord languages, as illustrated in (2). Such readings are generally easier to obtain for Flemish speakers, as there are several Flemish dialects that do in fact count as negative concord languages (Haegeman 1995). Here we are interested in the more northern varieties, that should have a genuine double negation grammar.

According to Zeijlstra, the kind of examples in (5) do not imply that Dutch is a hidden negative concord language, or freely tolerates both single and double negation readings. Zeijlstra formulates the following differences between EMNEs and n-words:

- (6) Differences between EMNEs and n-words:
- a. EMNEs always have an emphatic reading; n-words usually do not;
 - b. The formation of EMNEs is not productive; speakers generally differ with respect to which EMNE they accept and which they do not accept;
 - c. EMNEs are subject to strict adjacency conditions, contrary to NC constructions;
 - d. Only the first element of the EMNE may carry stress, whereas in NC constructions all elements may do so. (Zeijlstra, 2010, p. 40)

In his paper, Zeijlstra motivates the claims in (6) on the basis of a restricted number of carefully constructed examples. The first aim of this paper is to test Zeijlstra's claims against a larger set of empirical data. The second aim is to investigate more broadly what the lexical, syntactic and prosodic factors are that play a role in the double or single negation reading of sentences with multiple negative expressions, as there doesn't seem to be much literature on this issue beyond Zeijlstra (2010).

It is difficult to evaluate the emphatic or non-emphatic interpretation of combinations of negative expressions, so I will not address the claim in (6a), but focus on (6b-d). The first step towards the evaluation of (6b) and (6c) is to collect a number of instances of multiple negations from the Corpus Gesproken Nederlands (CGN) (Section 2). The data indicate that single negation interpretations are not restricted to strict adjacency – contra Zeijlstra's claim (6c). The corpus data are inconclusive as far as productivity is concerned (6b): very few instances of NC readings of double negatives were found, which makes it difficult to decide that some combinations are better than others.

The corpus data were not used to test the claim in (6d), because prosody is better investigated in the controlled environment of an experiment. Section 3 complements the data collection from the corpus with a production experiment which aimed to test whether distance matters, whether we find differences between various negative expressions, and what intonation is produced for single and double negation readings of sentences involving multiple negatives. The design was inspired by a similar production experiment that Huddleston (2010) carried out for Afrikaans. The results indicate that, in a sequence with two negative expressions, the first negation always carries stress, whether the sentence gets a single or a double negation reading. Although this does not falsify Zeijlstra's claim (6d) that the first element in an EMNE bears stress, it doesn't tell us anything about the semantics that comes with a pitch accent on the first negative. We also found that there was much more variation in the intonation patterns than we might have expected from the literature. In particular, there were too many single negation readings with a pitch accent on the second negative (besides one on the first negative) to maintain the claim that a single negation reading involves stress on the first negative only.

The conclusions drawn from the corpus research and the experiments are twofold:

- (i) single negation readings in Dutch are not restricted to adjacent pairs of negative expressions. The only complex lexical item consisting of two adjacent negative expressions is *niet niks* and its variant *niet niets* ('not nothing'), and it always gets a DN interpretation.
- (ii) single negation readings in Dutch do not correlate with a unique intonation pattern that can be clearly distinguished from the patterns used for double negation readings. The variation we find in the production experiment is larger than expected, and seems to correlate with lexical and categorical differences between negative expressions more than with distance or interpretation.

2. Double negatives in the CGN

The corpus used for this study is the Corpus Gesproken Nederlands (Spoken Dutch Corpus, CGN), which is an annotated corpus consisting of 900 hours of spontaneous speech (Boves & Oostdijk, 2003). Within this corpus it is possible to perform a content search (e.g. to search for occurrences of a word), and also to put certain constraints on such a content search. These features make it possible to search for occurrences of two different negative indefinites near each other in the corpus.

Searches were performed for all possible combinations of two negatives out of the following Dutch negative terms: *niemand* ('nobody'), *niets/niks* ('nothing'), *nooit* ('never'), *nergens* ('nowhere'), *niet* ('not'), *geen* ('no'), within a one-word, two-word and three-word

distance from each other. The CGN includes both (northern) Dutch and Flemish data. Figure 1 (from Fonville 2013) presents them separately:

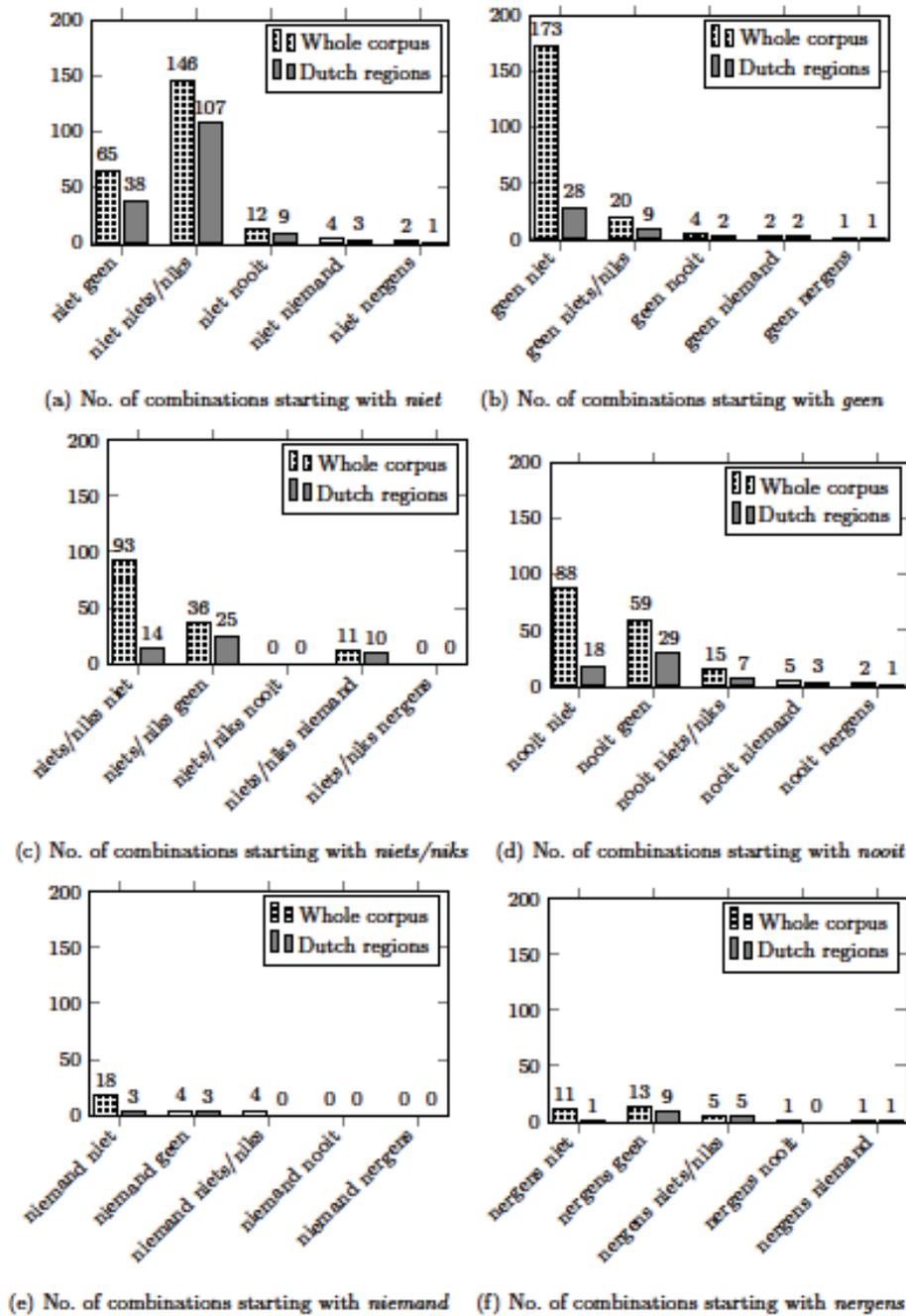


Figure 1: Number of negative combinations in the CGN

Figure 1 reveals substantial differences between Dutch and Flemish speakers, as expected (cf. Section 1). There are strong lexical constraints. Especially combinations starting with either *niemand* or *nergens* show a very low overall frequency (Figures 1c and 1f). As far as the Dutch regions are concerned, the most frequent combination is *niet niks/niet niets* ‘not nothing’ (Figure 1a). For each of the combinations in the Dutch part of the corpus, the interpretation of the sentence was manually determined in terms of double negation (DN), single negation (loosely labelled NC) or other. Examples are in (6):

- (6) a. Ik heb mijn kamer niet voor niets opgeruimd. [DN]
 I have my room not for nothing cleaned up
 ‘I cleaned up my room for a reason.’
- b. Josie heeft zich in haar leven nog nooit door niemand laten inpalmen. [NC]
 Josie has REFL in her life yet never by nobody let take in
 ‘Josie has never in her life let anybody take her in.’
- c. Er was daar niets wat er niet hoorde en niets ontbrak. [other]
 there was there nothing what there not belonged and nothing lacked
 ‘there was nothing that didn't belong there and nothing was missing’

The category ‘other’ included self-corrections, multiple negative expressions separated by a clause boundary as in (6c) (NC is a clause bound phenomenon), and other configurations that did not contribute to the research question. The results are summarized in Table 1 (from Fonville 2013):

Distance/ Interpretation	1-word	2-word	3-word
DN	14	78	2
NC	125	12	5
Other	29	71	94
Total	168	161	101

Table 1: Interpretations of negative combinations in Dutch regions

As Table 1 indicates, NC interpretations are much more frequent at 1-word distance than at 2-word distance, and NC interpretations at larger distances are exceptional. This is in line with Zeijlstra’s observations. However, it is just a tendency, not a hard rule. Although the differences are significant, distance does not determine the interpretation, as NC interpretations are found, even if the negative expressions are not adjacent, cf. (6b) and (7a-c).

- (7) a. En ik zeg niet eens geen dank je wel.
And I say not even no thank you
'And I don't even say thank you.'
- b. En je mag niet met niemand afspreken.
And you may not with nobody make a date
'And you are not allowed to make a play date with anyone.'
- c. En daarom wou 'ie dus ook geen club niet.
And therefore wanted he therefore also no club not
'And therefore he didn't want to join a club either.'
- d. Dat is niet niks natuurlijk.
That is not nothing naturally
'That is not nothing, of course.'

Although DN interpretations are more frequent at 2-word distance than at 1-word distance (cf. Table 1), both configurations are attested in the CGN (cf. 6a and 7d). The data in (7) falsify Zeijlstra's adjacency requirements in (5c), and I conclude that it is not possible to use distance between negative expressions as a reliable criterion to distinguish EMNEs from NC.

In fact, I suggest to turn the adjacency criterion around. Manual investigation of the data reveals that *niet niks/niet niets* 'not nothing' is the only DN combination found in the CGN at 1-word distance. So rather than fixing EMNEs as complex lexical items, as Zeijlstra suggests, we should probably view *niet niks/niet niets* as a complex lexical item with a DN interpretation. Given the low frequency of any other combination of negative expressions in the CGN with either a DN or an NC interpretation (cf. Figure 1), it is practically impossible to say anything about productivity of EMNEs on the basis of the corpus data. The corpus search neither confirms nor falsifies Zeijlstra's claim in (6b), but the lack of confirmation raises doubts about its strength. Follow-up research focuses on a production experiment in which spoken data are elicited in a setting that controls for interpretation.

3. Prosodic patterns of double negatives: EMNEs or not?

This section describes a production experiment that aims to determine to which extent Dutch speakers use prosody to distinguish single and double negation readings. Recall that Zeijlstra (2010) argues that only the first element of an EMNE may carry stress, whereas in negative concord constructions all elements may do so (cf. 5d). If single negation readings of sentences involving multiple negative expressions in Dutch do not qualify as negative concord, but as EMNEs, speakers should never pronounce them with stress on the second

negative expression. Conversely, stress on the second negative should be restricted to configurations with a DN reading. These two hypothesis were tested in an elicited speech experiment.

For the experiment, 31 participants (18 to 67 years old, 17 male, 14 female) were recruited, all native speakers of Dutch. The materials for the experiment were 20 sentences, each containing two negative expressions. There were four categories, each comprising 5 sentences. Categories 1 and 3 comprised sentences adapted from the CGN, where Category 1 consisted of combinations with a tendency towards a DN interpretation, and Category 3 of combinations with a tendency towards an NC interpretation in the corpus. Category 2 tested combinations in which the negative expressions were further apart in the sentence (3-word distance or more). Category 4 consisted of Dutch translations of some of the Afrikaans items Huddleston (2010) used in her production experiment.

Each of those 20 sentences was set in two different contexts providing for either a double or a single negation reading, which resulted in a total of 40 discourse fragments to be used as items in the experiment. (8) and (9) provide DN and NC versions of combinations in categories 1 and 2 for illustration (of course the context was presented in Dutch in the experiment). In all cases, the intended interpretation was reinforced both before and after the target sentence, to avoid any misunderstanding about the meaning.

(8) Target sentence: Dat is niet niks natuurlijk.

That is not nothing naturally

NC As far as the organization is concerned, Thomas didn't do that much. Most of the work such as the venue, the drinks, the band and the DJ was taken care of by Jeroen. I think Thomas just bought some decorations. *Dat is niet niks natuurlijk*, so you don't need to get him a thank you gift.

DN Thomas organized the whole party. He got the venue, the drinks, the band and the DJ. He also sent out the invitations, and handled everything else. *Dat is niet niks natuurlijk*, so it would be nice to get him a thank you gift.

(9) Target sentence: Niks van dat alles is nergens te vinden

Nothing of that all is nowhere to be found

NC The director gave me a long list of stage requisites we need for the play. I have been all over town this afternoon trying to find them, but in vain, for niks van dat alles is nergens te vinden. Now we still have nothing for the setting, and have to postpone building up the stage again.

DN The director gave me a long list of stage requisites we need for the play. I went to the most unusual places to find all the different objects, but eventually I expect I will manage, for niks van dat alles is nergens te vinden. That means that we will soon have everything for the setting, and can start building up the stage.

All items were divided between two lists, while ensuring to keep the balance between items with DN reading and items with NC reading, as well as the balance between items from the four different categories. Naturally, neither of the lists contained the same sentence both in a DN context and an NC context. Ultimately both lists contained 20 items and 20 fillers (fillers were the same for both lists).

Utterances were audio recorded in the university phonetics lab in a sound-treated cabin. Participants were seated in front of a computer screen on which the experiment was administered using a PDF slideshow. Each item or filler was presented on an individual slide and participants could use the keyboard to go through the experiment at their own pace. Participants were instructed to read each slide to themselves before reading it out loud, and imagine the recordings to be used in an audio test for people learning Dutch as a second language. After completion of the recording sessions, the initial 20 sentences containing negative combinations were extracted from their contexts. A total of 29 utterances had to be excluded from the analysis, because participants did not read the target sentence correctly, but changed word order, or left out one of the negatives; 8 of those were presented in a DN context, the other 21 in an NC context. The remaining utterances were analyzed with the software package Praat (Boersma & Weenink, 2012); the prosodic annotation of the contours was made with the support of the 'Guidelines for ToBI labelling' (Beckman & Elam, 1997). With 29 utterances excluded there were 591 utterances left to be analyzed for prosodic patterns; 302 from a DN context and 289 from an NC context. The analysis focused on the presence or absence of pitch accents on the two negative expressions, and determined whether these pitch accents were high (H) or low (L).

Figure 2 (from Fonville 2013) shows the frequency in percentages of the main intonation patterns found for all 591 utterances. All negative combinations that were produced with one of the pitch combinations shown in the figure are grouped in the corresponding bar, even if additional pitch accents were present in the same sentence. Additional pitch accents can be on words occurring before, in between, or after the two negatives in that sentence. All intonation patterns that include pitch combinations on the two negatives that are not explicitly shown in the figure belong to 'other'.

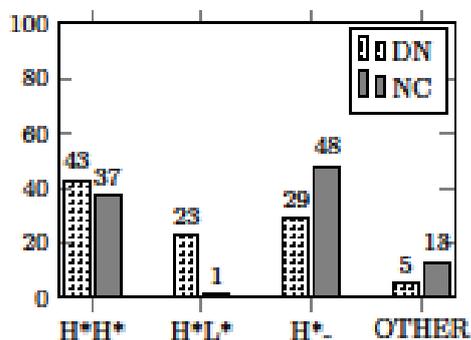


Figure 2: Pitch accents on negatives

The most striking outcome of Figure 2 is that both DN and NC readings are almost always realized by means of a high pitch accent (H*) on the first negative. In relation to Zeijlstra's claim in (6d), this means the pitch accent on the first negative is unlikely to differentiate EMNEs from n-words. However, Zeijlstra claims more specifically that EMNEs only carry a pitch accent on the first negative, whereas in negative concord configurations all elements may do so. Figure 1 shows that the H*- pattern (H* pitch accent on the first negative and no pitch accent on the second negative) is used in 48% of the NC readings, which makes it the most frequently used prosodic contour in that context, in line with Zeijlstra's view. However, that is not sufficient to support Zeijlstra's claim. In fact, under his view double negatives in Dutch would not count as EMNEs, for the H*H* pattern (H* pitch accent on both negatives) is produced for 37% of the utterances in an NC context. Given that only half of the cases display the configuration Zeijlstra predicts for EMNEs, and more than one third of the prosodic contours falsify his claim, Zeijlstra's claim that prosodic contours differentiate between EMNEs and n-words is not supported by the production experiment.

Obviously, a full investigation of Zeijlstra's claims would require a production experiment to be carried out in a bona fide negative concord language, and compare the results across languages. That is not the strategy pursued in this paper, which is restricted to Dutch. I will not push the productivity issue further, because participants had to read out loud a text that was given to them. They were not asked to evaluate well-formedness, which makes it hard to use this experiment to draw any firm conclusions concerning acceptability of certain combinations over others. In fact, it is more interesting at this point to step away from the debate on EMNEs versus negative concord, and see what the experiment tells us about the prosodic contours of single and double negation readings with two negative expressions in Dutch.

4. Prosodic patterns of single and double negation readings

The null hypothesis underlying the experiment is that Dutch speakers use different intonation contours to convey single and double negation. Statistical tests comparing either the observed distribution for DN contexts to the distribution for NC contexts ($\chi^2 = 356.81$, $df = 3$, $p = 0$) or the observed distribution for NC contexts to the distribution for DN contexts ($\chi^2 = 46.99$, $df = 3$, $p < 0.0001$) show that these distributions differ significantly from each other. Furthermore, in both tests the standardized residual shows us that the major contributors to this significant difference are the H*L* pattern and to a lesser extent the H*- pattern. Indeed, Figure 2 shows that the intonation contour H*L* (H* pitch accent on the first negative and L* pitch accent on the second negative) is reserved for DN readings, as it is almost never produced by participants in an NC context, while it is produced for 23% of the utterances in a DN context.

So based on Figure 2 we can conclude that the H*L* pattern is used exclusively in DN contexts. The H*- pattern is the most frequent intonation used in NC contexts, but it is not exclusively used to convey an NC meaning. The H*H* pattern is produced quite evenly in both DN and NC contexts, so this intonation pattern does not correlate with one particular interpretation.

Figure 2 presents the data from all four categories. It is possible to split up the data in various subgroups, and compare the role of different parameters. A relevant question that was left over from the corpus research concerns distance. It turns out that the patterns in category 3 (3-word distance or larger) do not differ significantly from the overall picture in Figure 2. I take this to confirm the earlier impression that adjacency is not a crucial factor in the prosodic realization of DN and NC readings. It turns out to be more interesting to compare sentence negation (*niet* 'not', *geen* 'no'), and negative pronouns (*niemand* 'nobody', *nooit* 'never', *nergens* 'nowhere'), as illustrated in Figure 3:

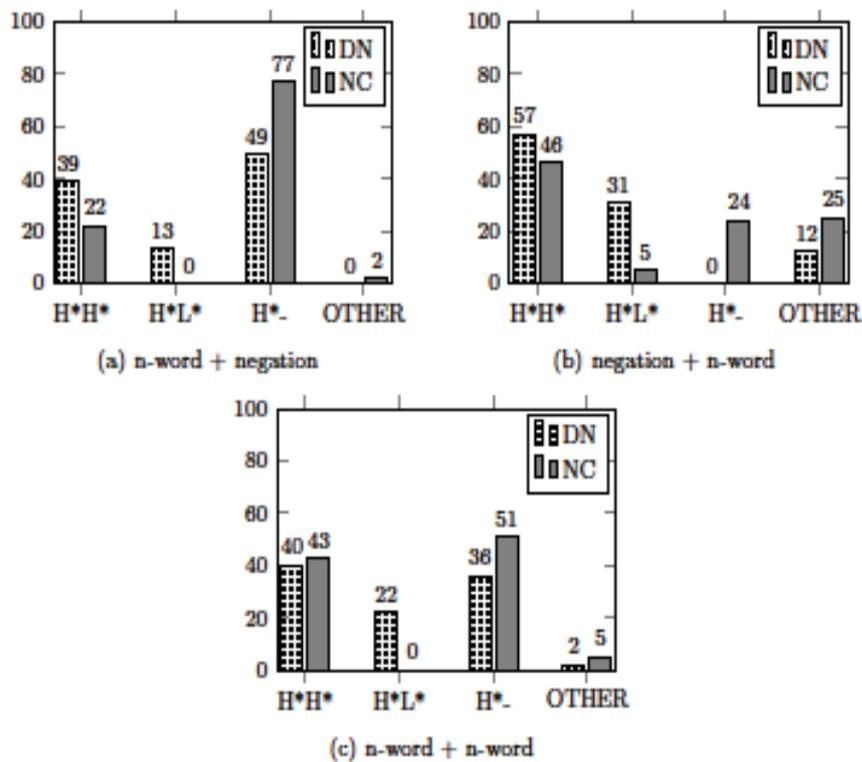


Figure 3: Pitch accents on n-words and negation

The distributions for combinations of two n-words in Figure 3c are not significantly different from the distributions for all data in Figure 2, both in DN contexts ($\chi^2 = 3:66$, $df = 3$, $p = 0:3006$) and NC contexts ($\chi^2 = 7:69$, $df = 3$, $p = 0:0529$). But the distributions for combinations containing an n-word followed by a negation in Figure 3a do differ significantly from the distributions for all data, both in DN contexts ($\chi^2 = 23:27$, $df = 3$, $p < 0:0001$) and NC contexts ($\chi^2 = 34:11$, $df = 3$, $p = 0:p < 0:0001$), the major contributor being the H*- pattern. And the distributions for combinations containing a negation followed by an n-word in Figure 3b differ significantly as well from the distributions for all data, both in DN contexts ($\chi^2 = 46:78$, $df = 3$, $p < 0:0001$) and NC contexts ($\chi^2 = 33:81$, $df = 3$, $p = 0:p < 0:0001$), the major contributor again being the H*- pattern as well as other. For the order negation + n-word in Figure 3b we observe high percentages for the H*H* pattern (DN: 57%, NC: 46%), quite low percentages for the H*- pattern (DN: 0%, NC: 24%), and a considerably high frequency for other (DN: 12%, NC: 25%). For the order n-word + negation in Figure 3a, on the other hand, the distribution is more or less the other way

around. Here we see very high percentages for the H*- pattern (DN: 49%, NC: 77%), and a moderate frequency for the H*H* pattern (DN: 39%, NC: 22%).

For the combinations of an n-word followed by a negation, the prosodic analysis was extended to investigate the role of pitch accents on elements in the sentence other than the negative. The results are in Figure 4:

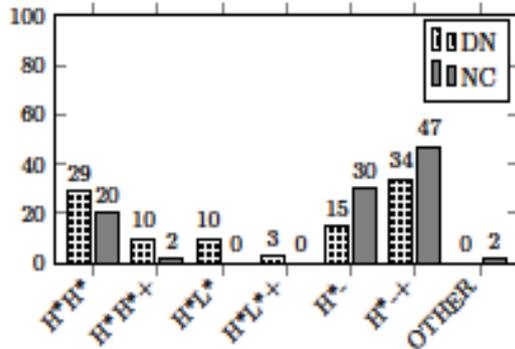


Figure 4: Pitch accent for n-word + negation

Figure 4 splits all intonation patterns encountered so far into patterns with solely pitch accents on the two negatives (i.e. H*H*, H*L*, H*-), and patterns with pitch accents on the two negatives as well as additional pitch accents on other words in the intonational phrase (i.e. H*H*+, H*L*+, H*-+). What we see in Figure 12 shows a rather high frequency of the H*-+ pattern (DN: 34%, NC: 47%), which is higher than the frequency of the H*- pattern (DN: 15%, NC: 30%). For the patterns H*H* and H*L*, on the other hand, this is not the case. Upon inspection of the utterances produced with the H*-+ pattern, it becomes clear that all of them contain *geen* ('no') as the second negative. Moreover, for almost all of those utterances the + actually turned out to signify a pitch accent on the noun immediately following *geen*, so the noun that this negative determiner modifies. Apparently, if *geen* is the second negative in a combination, the preferred strategy is to shift the pitch accent from this negative to the immediately following noun. This strategy does not seem to be used specifically in either DN or NC contexts, since for both contexts this pattern was produced for almost all utterances included in the H*-+ pattern in Figure 4. The more fine-grained investigation of the data in Figures 3 and 4 suggests that lexical and categorical properties play an important part in the prosodic patterns found with DN and NC readings, and deserve further investigation.

5. Conclusions

The CGN data indicate that NC readings are more often realized at a 1-word distance than at a distance of two words or higher. However, this is a tendency, and not a hard requirement on adjacency. Thereby, Zeijlstra's claim that double negatives with a single negation reading count as EMNEs that require adjacency (6c) has been falsified by the corpus investigation. The claim that EMNEs are not productive was neither confirmed, nor falsified by the corpus analysis, because most combinations were rather infrequent. In contrast, frequency and distribution suggest that the combination *niet niks* and its variant *niet niets* ('not nothing') count as complex lexical items with a DN interpretation.

A production experiment set up to elicit intonation contours for sentences with double negatives reveals that both DN and NC are almost always realized with a pitch accent on the first negative. The most frequent pattern with which NC readings are realized is the H*- pattern, in which the second negative lacks a pitch accent. However, Zeijlstra's claim that EMNEs are only compatible with a pitch accent on the first negative is falsified by the productive use of the H*H* pattern in both DN and NC contexts. A stronger generalization emerges for DN readings, as the H*L* contour is exclusively used in DN contexts.

A more fine-grained investigation of the data reveals that the distribution of intonation contours is not the same for all lexical items, with the H*- pattern being particularly frequent for combinations of an n-word followed by negation. Further unpacking of this data shows that the pitch accents shifts to the noun following *geen* 'no'. The generalizations emerging from the corpus research and the production experiment lead away from a narrow focus on EMNEs toward a broader investigation of the lexical, categorical, syntactic and prosodic aspects of the expression of single and double negation in Dutch.

6. References

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