

# Swabian ed and edda: Negation at the interfaces

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## Abstract

This paper discusses the interplay of linear word order, negation, and prosody, and its implication for the scope of negation expressed by two Swabian negation particles *ed* and *edda* which correspond to the Standard German negation particle *nicht* ('not'). By means of a corpus study of spoken Swabian from the 60s, the paper offers an insight into the analysis of negation from the perspective of several grammar modules, and into the distribution of Standard German *nicht* via the comparison to the use of two different Swabian negation participles.

## 1 Introduction

Swabian, a Southern German dialect with approximately 820.000 speakers, has two negation particles, *ed* and *edda* (variations: *ned/id* and *nedda/idda*), where *edda* only occurs at the end of sentences, while *ed* occurs in all possible positions.<sup>1</sup> The two forms corresponds to the single negation particle *nicht* ('not') in Standard German and, taken together, show a similar distribution to the Standard German negation particle. However, the two negation particles seem to have a complementary distribution at the end of a clause, which might offer insights into hitherto undiscussed aspects of negation.

Negation in Standard German has been widely discussed from a syntactic and a semantic perspective (see, for example, Penka and Zeijlstra (2010) and references therein) but less so with respect to prosody. Although several authors note that prosodic structure seems to play a role when it comes to determining the scope of negation (Blühorn, 2012; Jacobs, 1991), a larger prosodic corpus analysis of spoken data has not been conducted at this point and a formal analysis of the interplay between negation, linear word order, and prosody in German has to date not been provided. A second aim of this paper is thus to establish patterns, where prosody can guide the semantic analysis of the scope of negation and can thus contribute valuable information to the overall linguistic analysis of a clause.

As Swabian negation roughly follows the same distributional patterns as Standard German negation, the following overview of the negation particle *nicht* will be taken as a starting point.<sup>2</sup> By means of corpus data of spoken Swabian from the 60s, the paper will proceed to a discussion of negation in the context of linear

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<sup>1</sup>Similar distinctions can also be found in other dialects, for example, in Austrian, which distinguishes between *niet* and *nöt*. An exact understanding of whether these distinctions are similar to the one found in Swabian is left to further research.

<sup>2</sup>Further possibilities of negation, for example, negative indefinites like *kein* 'not a/no', other more implicit negations like *jemals* 'ever', morphemes implying negation like *ungeschickt* 'in-/un-', connectors like *weder ... noch* 'neither ... nor', or any interaction of the particle with other elements like *nicht mehr* 'no more' or *nicht einmal* 'not even' are excluded from the discussion.

word order and prosody on the one hand, and the insights offered by the use of two negation particles in Swabian on the other hand. The paper concludes with a sketched analysis of the Swabian data across the LFG modules.

## 2 Negation in Standard German

From a diachronic perspective, the negation particle *nicht* underwent the Jespersen Cycle (Jespersen (1917), see also Jäger and Penka (2012)). In Old High German, sentential marking was indicated by the preverbal clitic *ni*, but Old High German also featured a second, verb-independent particle: *niowiht* (‘nothing’), which had a relatively free distribution. In Middle High German, both of these particles could be used for sentential negation. In Modern German, finally, the preverbal clitic was completely replaced by the particle *niowiht* (today’s *nicht*).

### 2.1 Distribution

A consequence of this process seems to be that the modern negation particle has a fairly free distribution in the German clause structure. As German linguistics traditionally divides sentences into fields, which organise the linear order of elements in a German clause, we will briefly review this structure as it helps to keep track of the negation particle.

Vorfeld (pre-field)	linke Satzklammer (left bracket)	Mittelfeld (middle field)	rechte Satzklammer (right bracket)	Nachfeld (post-field)
subject topicalised objects ...	<b>finite verb</b>	subject objects Adjuncts ...	<b>participles</b> infinitives verb particles ...	sub. clauses Adjuncts ...

Table 1: An overview of the field structure of a German sentence

While the occupants of the fields can differ greatly depending on the clause structure, it is important to note that in a non-subordinate clause, the left bracket contains the finite verb and the right bracket the non-finite verbal complex (if present).

- **Pre-field:** everything before the finite verb
- **Post-field:** everything after the non-finite verbal complex
- **Middle field:** everything between the finite verb and the non-finite verbal complex.

In the following example, the left and the right sentence bracket (LB/RB) are occupied by a finite auxiliary verb and a participle verb, respectively. All possible positions for the negation particle are indicated by an underscore and each position corresponds to a specific scope of negation.

- (1)    \_\_\_       Amra   **hat**<sub>tb</sub>       \_\_\_       dem       Lehrer  
       (NEG) Amra   have.3.SG   (NEG) the       teacher
- \_\_\_       die       Aufgaben   \_\_\_       **gegeben**<sub>rb</sub>  
       (NEG) the    exercises   (NEG) give.PTCP
- ‘Amra has(n’t) given the teacher the exercises.’

This placement variability leads to a number of different possibilities for the scope of the negation particle.

## 2.2 The scope of negation

Blühdorn (2012), following Helbig and Buscha (2000), notes that the negation particle is usually placed directly preceding the element it negates. If the particle occurs directly before the verb, it tends to scope over the verb and causes ‘sentential negation’. If *nicht* occurs before another element apart from the verb, it is more likely to scope over that element and cause ‘special negation’ or ‘constituent negation’, although it might, in principle, also scope over all following material.<sup>3</sup>

In example (1), there are several possibilities for the scope of negation if the negation is placed in the position right after the left sentence bracket (the finite verb). In the following, scope of negation is indicated by the bold form.

- (2) *Amra hat*<sub>LB</sub> *nicht* *dem Lehrer die Aufgaben gegeben*
- a. Amra did not give the exercises **to the teacher** (but to the principal)  
    → ‘most likely’ given linear word order
  - b. Amra did not give **the exercises** to the teacher (but gave him an apple)
  - c. Amra did not **give** the exercises to the teacher (but threw them at him)
  - d. Amra did not **give the exercises to the teacher** (but went for a walk)
  - e. Amra did not give **the exercises to the teacher** (but gave an apple to the principal)
  - f. ... and any other combinations

Jacobs (1982, 1991) also discusses the correlation with word order, but furthermore notes that this correlation is most likely in the Middle field, and that the correlation between scope and linear order is not necessarily true in all cases.

To find the scope of a negation, previous research (e.g., Jacobs, 1991; Jäger, 2008) applied the *sondern*-phrase. *Sondern* can be translated with *but/instead/but*

<sup>3</sup>This distinction between sentential and constituent negation has been discussed frequently; Blühdorn notes that sentential negation can in principle be viewed as just another type of constituent negation, see also Jäger (2008).

rather in sentences like: *It was not the boy who rolled down the hill, but the girl*, where *sondern* explicitly replaces the proposition that the negation operated on (see also Jäger, 2008). *Sondern* is often contrasted with *aber*, which can be translated with ‘but’, meaning ‘however’. While *sondern* is applied in situations with a contrast between possible alternatives and is often used to correct a previous statement which includes a negated element, *aber* can be used as a continuation of positive or negative statements and is often used to add additional information.

- (3) a. I am not tall, *sondern* short  
 b. I am not tall, *aber* happy

Example (3a) has a corrective context; somebody assumed that the speaker was tall. The second statement in (3b) is not corrective in that it does not imply that somebody claimed that the speaker was tall. At most it is contrastive of some previous proposition that only tall people can be happy. As the paper discusses in Section 3.1, both conjunctions play a role when determining the scope of negation, and the difference between the two conjunctions might be essential for understanding the difference between *ed* and *edda*.

### 2.3 The scope of negation and prosody

Jacobs also notes that prosodic ‘focus’ can disrupt the preference of the negative particle to scope over the element it precedes. Consider the following examples from Jäger (2008, 22, caps indicate prosodic emphasis).

- (4) a. Karl ist nicht nach Berlin geflogen  
 Karl is not to Berlin flown  
 ‘Karl didn’t fly to Berlin.’  
 → He did not fly to Berlin (but might have flown to Frankfurt)
- b. Karl ist nicht nach BERLIN geflogen  
 → but to Frankfurt
- c. Karl ist nicht nach Berlin GEFLOGEN  
 → but went by train
- c. KARL ist nicht nach Berlin geflogen  
 → but Peter did

Note that the prosodic focus indicates that there is an alternative possibility for the element under focus which would render the proposition true. This is especially interesting in the comparison of (4a) and (4b), where the former unmarked construction can either mean that only the constituent directly following the negation is replaced, or that the whole proposition is false. Example (4b) on the other hand

indicates that the negation only operates on the prosodically focussed element immediately following.

Going back to example (2), it becomes clear that prosody will most likely also play a role in determining the scope of the negation. For the individual continuations to become possible, a particular part of the sentence has to have prosodic prominence (roughly: the parts in bold form).

## 2.4 Negation and questions under discussion

As negation particles are very similar to focus particles, we would like to propose that negation can be modelled in terms of *Questions under Discussion* (Stalnaker, 1978; Roberts, 1996). Under this view, every discourse between two participants is viewed in terms of a shared common ground which is often modelled as a set of propositions, that is, a set of sets of possible worlds. Assertions can then be viewed as updates of the common ground, with the ultimate goal of reducing the context set (the possible worlds) to the actual world. Questions under discussions (actually ‘topics’ under discussion, QUD, Roberts 1996) are open questions in the discourse which the discourse participants are mutually committed to resolving.

The use of a negation can then be seen as rejecting a proffered assertion and as a signal that a QUD is ‘re-opened’, that is, the QUD is unresolved. By means of either linear order or by marked prosodic prominence it is made clear which part needs to be replaced for the rejected assertion to be accepted as part of the common ground. Effectively, prosodic prominence thus allows the speaker to constrain the possible sets of propositions for the QUD that was re-opened by the negation.

## 3 Corpus Work

The data for this paper was taken from the *Zwirner corpus* (*Zwirner Corpus*, 1950s-1960s) conducted in 1966 and 1968 in smaller villages in the Swabian area. This corpus was chosen because there are no other resources for unscripted spoken Swabian; that is, while the speakers are recorded, they are not prompted to use a particular expression, but speak freely in their native dialect. Furthermore, these recordings reflect the dialect without the now common influence through exposure to other dialects (including standard German).

A random sample of 13 speakers was chosen by the authors. The speakers were between 31 and 75 years old and had spent most of their life in their villages. The interviewed speakers talked about life in the villages while they were growing up and during their adulthood. This included childhood memories (e.g., pranks, friendships) as well as descriptions of, for example, the correct treatment of a vineyard. The interviewer is the same in all interviews and a native speaker of Swabian. He only engages with the interviewed person if the speaker stops speaking, prompting them to comment on a particular topic.

The total length of the spoken data was 4 hours and 6 minutes. In a first step, the

authors listened to the recordings and noted down every sentence that included the negation particles *ed/edda*. For every sentence a decision was made as to which element was in the scope of the negation. All sentences containing a negation particle were extracted for a more compact prosodic analysis at a later stage via the annotation software Praat (Boersma and Weenink, 2013). The total number of sentences containing at least one negation was 254.

### 3.1 Negation, linear word order, and prosodic prominence

For our analysis we only chose those sentences which had a clear left and right sentence bracket (as explained above in section 2.1). As spoken data is often fractured, this step was taken to allow for a relatively uniform data set. The resulting 94 instances were further divided according to which (if any) elements intervened between the negation particle and the final verb. The material preceding the particle in the Mittelfeld was not taken into consideration with respect to the group division as the negation only scopes over the following material in an unmarked structure. The division based on the material between the negation and the final verb resulted in the following groups:

1.	(...)	Neg	A(dv)P	NP/PP(+)	V	⇒ 10 cases
2.	(...)	Neg	A(dv)P		V	⇒ 24 cases
3.	(...)	Neg		NP/PP(+)	V	⇒ 8 cases
4.	(...)	Neg			V	⇒ 53 cases

Table 2: Possible sequences between negation and final verb in the middle field

With respect to the prosodic analysis, the previous accounts did not clearly specify their methodology. Blühdorn (2012), who focusses on work by Buering (2006) and on the relationship between prosody and notions of information structure like ‘topic’ and ‘focus’, simply refers to ‘rising’ and ‘falling’ accents. He unfortunately does not provide a detailed overview of the data or the method he used, and in particular rejects the idea of a prosodic reflection of different focus types (e.g., a prosodic distinction between broad vs. narrow focus).

In this paper, we use the acoustic indications established in Baumann et al. (2007) who show clear differences between different types of focus structures (broad, narrow, contrastive). As Baumann et al. (2007) note, prosodically marked focus can be expressed on a number of levels. Two that will be taken into consideration in this paper as well are 1) tonal considerations, where a sentence with a late contrastive focus will have fewer prenuclear accents, and higher/steeper nuclear accents, as well as 2) durational measurements, where an increased duration is expected to occur on the syllable that carries the main accent. Baumann et al. also observe that with broad focus structures, the different pitch accents in a clause are subject to a general downstep pattern; that is, a H\* pitch accent following another

H\* pitch accent will most likely be lower than the first accent. In contrastive focus constructions, however, the pitch accent on the contrastive element is most likely to be at the same level or higher in comparison to a previous accent. Baumann et al. conclude that this strategy emphasises the prominence of a particular element and supports the marking of a semantic contrast.

In the following, the four sentence types listed in Table 2 will be discussed with respect to linear word order, the scope of negation, and prosody.

### 3.1.1 ed A(dv)P XP(+) V

The first set consisted of 10 sentences where the negative marker *ed* was placed before an AdvP followed by an NP or PP (and in some cases a second NP/PP). In 7 sentences, the negation directly referred to the following adverbial. In 5 of these cases, the adverbial received main stress. However, in 2 cases it was the following noun which received main stress. Although this would suggest that the noun is in the scope of the negation, there are other factors at play. One of the examples ((6b)) is discussed below; the other example contained the particle *gar*, which can be translated as ‘at all’ and which cannot be applied to nouns, but refers to an adjective. The combination of *gar* with the negation particle in (5) thus forces the adjective to be in the scope of the negation, otherwise the clause would be ungrammatical.

- (5) ... gar ed schee **Wetter** gwea  
 ... at all NEG nice weather be.PTC  
 (It) wasn’t nice weather at all.

*Continuation:* sondern schlechtes (but bad (weather)).

(Sp 166, 154 s)<sup>4</sup>

There are only three occurrences where the negation referred to the following noun which in all cases carry a prosodically marked contrastive focus. In these sentences, the linear word order does not indicate a differing scope of negation; scope of negation can only be determined by means of a prosodic analysis.

In the following, one of the examples with contrastive focus is compared to a similar example, where the prosodic pattern is unmarked. Both sentences have been reduced to the relevant parts. Example (6a) is a sentence, where the contrastive prosodic marking of the noun (*Trollinger* = a type of wine) places this noun within the scope of negation. In (6b), on the other hand, the negation refers to the material directly following, the quantifier construction *so viel* (‘so much’).

<sup>4</sup>In the corpus, each speaker (Sp) is assigned a number to ensure anonymity (here: 166). ‘s’ stands for ‘second’ and refers to the position of this specific utterance in the overall recording of this speaker.



- (6) a. ... ed so viel **Trollinger** ghet  
 ... NEG so much Trollinger have.PTC  
 (They) didn't have so much Trollinger.  
*Continuation:* sondern Lemberger (but 'Lemberger');  
 \*sondern weniger (but less)

(Sp 95, 380 s)

- b. ... ed **so viel** Arbeit gmacht  
 ... NEG so much work make.PTC  
 (They) didn't create so much work.  
*Continuation:* sondern weniger (but less);  
 \*sondern Freizeit (but free time)

(Sp 169, 1475 s)

Figure 1 shows the respective speech signals for examples (6a) and (6b).<sup>5</sup> In the prosodically contrastive example on the left, *ed so viel* does not carry an accent and is prosodically phrased with the previous material. *Trollinger*, on the other hand includes a very large rising pitch span, and a strong L\*+H focus accent.<sup>6</sup> In the speech signal on the right, on the other hand, *ed so viel* carries an accent and seems to form a prosodic unit for itself. The following noun *Arbeit* also has an accent, but it is downstepped from all previous accents in the sentence and thus does not indicate a contrastive element.

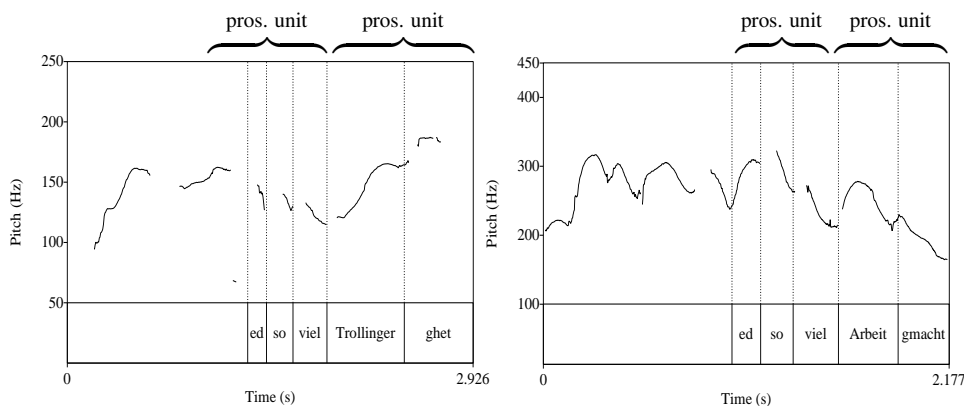


Figure 1: Speech signals for contrastive noun (6a) on the left, non-contrastive noun (6b) on the right.

Another indication for a contrastive context can be seen in the analysis of syllable duration.

<sup>5</sup>As the speakers had different genders, the pitch scale was adjusted to make the examples comparable.

<sup>6</sup>The further rise on *ghet* is a continuation rise to the following clause (where the speaker indeed replaces 'Trollinger').

	<i>ed</i>	<i>so</i>	<i>viel</i>	noun (1st syll)
(6a) <b>contrastive</b>	0.14	0.19	0.24	<b>0.21</b>
(6b) <b>non-contrastive</b>	0.15	0.17	0.24	<b>0.15</b>

Table 3: syllable duration in seconds in examples (6a) and (6b)

While there is no significant difference between the two versions of *ed so viel*, the difference in duration on the first (lexically stressed) syllable of the noun is very distinct: the first syllable of the contrastively stressed *Trollinger* is significantly longer than the first syllable of the noun *Arbeit* in the non-contrastive context.

### 3.1.2 ed A(dv)P V

The second set contained sentences, where the *ed+A(dv)P* combination was placed directly before the verb without an intervening noun. There are 23 cases, where the negation scopes over the following A(dv)P. In each case, the head of the A(dv)P was stressed. The negation itself was stressed in about 50% of the cases.

There was only one case where the negation did not refer to the following material, but to a topicalised element in the pre-field, which carried prosodically contrastive stress. The negation particle *ed* also carried stress, but not so the following material.

- (7) **Onda** ka mr's **ed** so gut lagra  
 Downstairs can one.it ED so well store.PRTC  
 'One cannot store it so well downstairs.'

(Sp 164, 226 s)

In standard linear word order, *onda* would be placed after *gut*: .... *ed so gut onda lagre*. Its topicalisation in the pre-field and the additional prosodic prominence enforce the negation to scope over it.

### 3.1.3 ed NP/PP V

The third group consisted of the negation particle followed by an NP or PP and the verb. In 8 of 8 cases, the head noun received main stress and was in the scope of the negation.

### 3.1.4 ed V

The situation is more diverse with the last, large group of 53 sentences, where the negation operator directly precedes the verb. In 26 cases, the negation particle directly refers to the following verb. In all of these cases, the verb carries main stress; in some of them, the negation particle carries stress as well. Only one case shows a slightly different pattern: the verb is unstressed and the noun preceding

the negation carries main stress. However, the following negation particle has a ‘semantically meaningful’ contrastive stress with an upstep in the pitch, similar to the one discussed in Section 3.1.1.

- (8) Des hat mr sich als **rechter** Bauer **ed** nemma lau  
 that has one himself as proper farmer NEG take let  
 ‘A proper farmer would not let that be taken away from him.’

(Sp 170, 809 s)

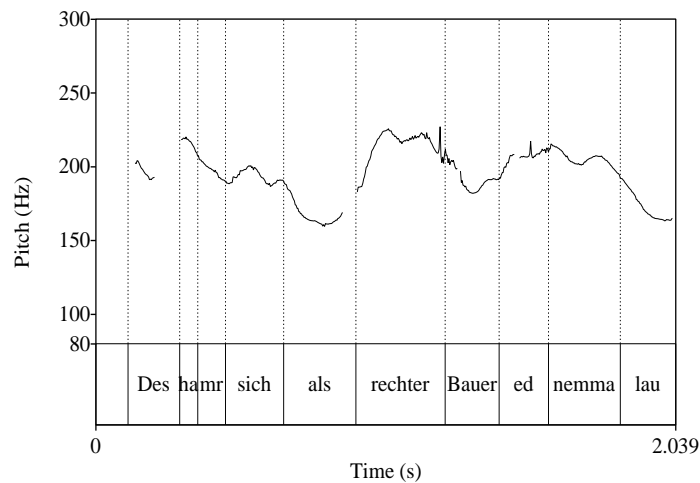


Figure 2: Speech signal for example (8)

In (8), *rechter* ‘proper’ carries a contrastive accent. However, instead of a following deaccentuation, there is a second prosodic prominence on *ed* which shifts the focus to the prosodic unit of the negation particle and with it to the following verb.

The second group consists of 27 sentences where the negation particle does not scope over the verb. Approximately one third of the sentences contain a topicalised, prosodically stressed item in the pre-field that would otherwise be positioned to the right of the negation particle in an unmarked sentence (similar to example (7)). The topicalised items found in the corpus comprise nouns, adjectives, and infinitives.

- (9) ... en **Apfel** häbet mir ed **ghet**  
 ... an apple have we NEG had  
 ‘An apple, we didn’t have’

(Sp 175, 158 s)

Another third of the sentences contains a topicalized, stressed demonstrative pronoun (‘des’), which would be placed before the negation in an unmarked sentence. It seems to be difficult to stress an object demonstrative pronoun in the middle field, so placing it in the pre-field might be a strategy to mark a pronoun as contrastive.

There are five cases where the linear word order might suggest that the negation scopes over the verb, but where the prosodic marking clearly suggests otherwise. In (10), the natural continuation given linear order would be something like ‘but I knitted’. However, the prosodic focus on the subject pronoun opens up this proposition for alternatives, that is, there is somebody else who could spin. And indeed, in the following clause, the speaker talks about a woman in the village who used to spin wool.

- (10) Ja i han ned gschponna  
 Yes, I have NEG spin.PRTC  
 ‘Yes, I didn’t spin.’

(Sp 174, 476 s)

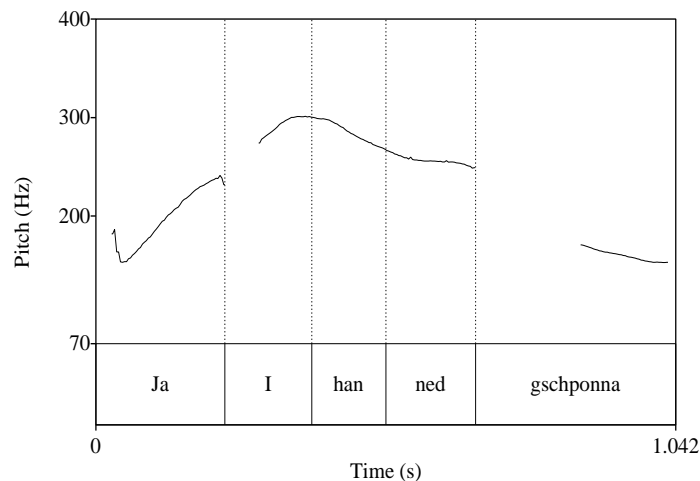


Figure 3: Speech signal for example (10)

In the speech signal in Figure 3, the contrastive focus on the subject pronoun is marked very distinctly: the pitch span as well as the duration of the pronoun mark this as relevant for meaning. The rest of the clause shows a very clear deaccentuation, typical for postfocal material.

An interesting insight when looking at these examples is the preference for the ‘continuation’, that is, whether a continuation with *sondern* or *aber* is preferred. All the examples discussed under section 3.1. prefer a continuation with the *sondern*-phrase, except for this very last group where *ed* is placed directly preceding the verb, but does not refer to the verb in that position. All of these 27 examples would be more natural with a continuation starting with *aber* (although *sondern* is an alternative option in some of these examples).

### 3.2 *ed* and *edda*

So far, only *ed* was discussed. *Edda* only occurs at the end of sentences and is thus never part of a typical middle field between two sentence brackets. If a sentence contains a right sentence bracket in form of a participle, a negation particle (*edda/ed*) cannot occur following that bracket, so *edda* never appears in sentences that have both brackets. It can, however, occur in sentences where the participle/infinite is topicalized, that is, where the typical occupant of the right sentence bracket is placed in the pre-field. This raises the question whether the negation particle in these structures actually occupies the right sentence bracket.

The form *ed* also occurs at the end of sentences, but less often than *edda*: *ed* was found nine times at the end of a sentence, while *edda* was found 19 times. Of these, several were interjection statements, a version of ‘I don’t know’ placed in the middle of another utterance. These were excluded from the analysis, leaving 8 examples with *ed*, and 15 with *edda*. As these are relatively small numbers with regard to sentence-final negation, the following observations can only be cautious speculations. Example (11) shows a typical sentence with *ed*:

- (11) Oine den scho no ebbes raus, aber **viel** grad **ed**  
 Some do still something out but much really NEG  
 ‘Some still get something out (of the ground), but it’s not really much.’  
 (Speaker 164, 136 s)

In the clause *aber viel grad ed*, *viel* and *ed* are both stressed; *viel* is in contrastive focus to which the negation refers. Of the eight sentences used for final *ed*, seven were similar to (11) in that they scoped over a particular element (mostly adjectives, one noun). Only in one case did *ed* scope over a clause that was uttered in the previous context and was deleted in the clause with *ed*: ‘Did they have to work?’ – *überhaupt ed* (‘not at all’). Elliptic constructions (of different types) were found in four cases, three sentences were ‘complete’. In the elliptic examples, the negation seems to be used to replace a context that was previously stated, often occurring together with the element which is under discussion and whose replacement would render the proposition true.

Of the 15 sentences with *edda*, there are 11 with elliptic constructions. None of the negation particles scope over an adjective; rather, the scope seems to be broader. Most negation particles in this group seem to scope over the verb and larger parts of the sentence as in (12).

- (12) da hat mr no koi Sämaschine ghet  
 at.that.time has one yet no seeder have.PTC  
 ... ond schpäter au no edda  
 ... and later also yet NEG  
 ‘One didn’t have seeders at the time ... and later (one) also not (have them).’  
 (Speaker 175, 428 s, shortened)

With respect to stress, in the four ‘complete’ sentences, *edda* does not carry any stress. While most examples were in some type of contrast to some previous context, this was more pronounced in the elliptic examples. In four of them, there was an explicit corrective construction in response to something the interviewer had asked, introduced by a preceding ‘No’. In these cases, the complete sentence was deleted except for the negation particle (which negated the proposition) and the element, which needed to be replaced for the proposition to be accepted ((13)).

(13) (Interviewer: ‘Is there a bus to Geislingen?’)

Noi, von **uns** aus **edda**

No from us off NEG

‘No, not from us (our village to Geislingen)’

(Speaker 169, 894 s)

In all of these examples, the item-to-be-corrected and *edda* were stressed. In the only corrective focus example found with *ed*, the negation particle was not stressed.

Another interesting observation is the fact that for the sentences with *edda*, it feels more natural to continue with ‘aber’. With the sentences ending in *ed*, this is only the case for the two sentences where the negation particle does not refer to an adjective. All others have a strong preference for a continuation with *sondern*. It is not quite clear what exactly distinguishes these two groups, especially as these seem to go beyond the distinction between *ed* and *edda* (as discussed in Section 3.1.4). As stated above, the data is too sparse to make a final conclusion. We can at this point only leave these author observations for future research.

### 3.3 A note on *ned* and *ed*

During the analysis, it became clear that six speakers used two versions of the negation particle: *ed/edda* and *ned/nedda*. One speaker and the interviewer constantly used *ned/nedda*, 6 speakers used only *ed/edda*. As these forms are usually attributed to regional variation and should thus only occur rarely with one speaker, we wanted to see whether there is a constant pattern with the speakers that used both versions.

For this investigation, we looked at the material preceding the negation particle. Among the six speakers, there were 50 occurrences of *ned*, and 66 occurrences of *ed* (with a fairly proportional distribution within each speaker). From a phonological perspective, no consistent pattern was found: neither the preceding segmental material, nor stress at the word level, nor stress at the sentence level seemed to have an effect. So far we can only conclude that the use of *ned* and *ed* is free variation.

## 4 Negation and prosody: an LFG analysis

The German XLE grammar uses the concept of fields to organize sentence structure (Dipper, 2003; Butt et al., 1999). Each field is assigned a metacategory with the finite verb as the left bracket, and the non-finite verbal complex as the right bracket (see also Table 1).

- (14) S  $\rightarrow$  VORFELD  
       V2     “finite verb”  
       MITTELFELD  
       VC     “non-finite verbal complex”  
       NACHFELD

The middle field has a fairly free word order; and as demonstrated in example (1) that is also true for the distribution of *nicht* in the middle field. The (shortened) metacategory MITTELFELD can include NPs, PPs, and Adverbs in any order. The free word order is made possible by the shuffle operator (,) which allows for all categories to appear in any order.<sup>7</sup>

- (15) MITTELFELD  $\equiv$  NP\*, PP\*, ADV\*, (NEG)

The negation particle *ed* can be optionally realized in the middle field, where it can be freely placed between the constituents, similarly to adverbs, but not with a completely identical distribution (see Jäger, 2008). *Edda*, on the other hand, should optionally be allowed to replace the VC in the main S rule in (14) together with a constraint that the NACHFELD cannot be realized.

- (16) ... { VC NACHFELD | NEG<sub>*edda*</sub> }

Przepiórkowski and Patejuk (2015) propose two negation attributes: ENEG (appr. sentential) and CNEG (for constituent negation). Such a fine-grained distinction is not necessary for the data presented above. Syntactically, the negation is not part of the other constituents in the metacategory, for example, it is not a daughter of the NP. Its scope is determined either by linear order, which can be regulated via f-precedence and ‘right sister’, or by prosodic prominence.<sup>8</sup> A standard adjunct notation would thus suffice (ParGram, see also Laczko (2014)).

- (17)  $\left[ \begin{array}{l} \dots \\ \text{ADJ} \left\{ \left[ \begin{array}{ll} \text{PRED} & \text{'ed'} \end{array} \right] \right. \\ \left. \left[ \begin{array}{ll} \text{ADJUNCT-TYPE} & \text{neg} \end{array} \right] \right\} \end{array} \right]$

<sup>7</sup>Existing constraints concerning the linear order of the German Mittelfeld go far beyond this paper and are not relevant to the point made here.

<sup>8</sup>F-precedence could be combined with the rule in (15) via intersection, for example, & NEG  $<_f$  [NP | PP | ADV]. How this constraint can be formulated in combination with a shuffle operator is left for further research.

In order to capture the prosodic patterns, we follow the proposal made by Bögel (2015) for the prosody-syntax interface and extend it to include the exchange with information structure. In this approach, the interface between c-structure and p-structure is mediated via two transfer processes: the *transfer of vocabulary*, which exchanges phonological and morphosyntactic information of lexical elements via the multidimensional lexicon, and the *transfer of structure* ( $\natural$ ), which exchanges information on syntactic and prosodic phrasing, and on intonation.

The model distinguishes between *comprehension* (from form to meaning, parsing) and *production* (from meaning to form, generation). During *production*, the information from different modules, for example on c-structure constituency and i-structure values, is encoded in p-structure. During *comprehension*, information from the speech signal feeds into p-structure in form of acoustic cues (fundamental frequency, length, intensity, ...). This information is translated into more categorical terms, for example, prosodic units and pitch accents, that allow for a meaningful interpretation of the speech signal by other modules of grammar.<sup>9</sup>

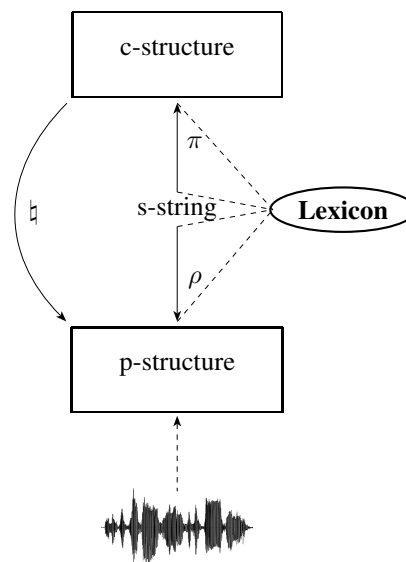


Figure 4: Abstract overview of the prosody-syntax interface during comprehension

Consider the following example, where the scope of negation is determined via prosody.

<sup>9</sup>This approach follows the hypothesis that any grammar framework should follow a ‘directional’ perspective; in the work on the interface to prosody, but also in the computational implementations of the ParGram effort, this distinction between comprehension and production is essential. A thorough debate, however, goes far beyond the scope of this paper.



(18) Ravi hat ed im Bett gschlafa  
 Ravi has NEG in.the bed slept  
 ‘Ravi didn’t sleep in the bed.’

- a. **‘Unmarked’ prosody:** negation scopes over *im Bett*  
 → ... *but he slept on the sofa*
- b. **Contrastive stress on Ravi:** negation scopes over *Ravi*  
 → ... *but Amra slept in the bed*

Analysing the written data in terms of linear word order does not necessarily yield the right results. The only way to unambiguously interpret the meaning of this sentence is by considering prosody, that is, p-structure in LFG. P-structure in Bögel (2015) is represented via the p-diagram, a linear syllablewise representation of the speech signal over time. The following representation shows the p-diagram for example (18b) during *comprehension*.

↑	PROS. PHRAS.	( $\iota$	...	...	...	...	...	...	) $\iota$	↑	interpretation
	GToBI	<b>H</b>	...	...	...	...	...	...	...		↓
	PROMINENCE	<b>3</b>	..	...	...	...	...	...	...		
	DURATION	0.27	0.19	0.14	0.16	0.14	0.12	0.36	0.23		signal
	FUND. FREQ.	208	209	169	157	162	165	160	155?		↓
	SEGMENTS	[ʁa]	[vi]	[hat]	<b>ed</b>	[im]	[bet]	[gfla]	[fə]		
	VECTORINDEX	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>	S <sub>4</sub>	S <sub>5</sub>	S <sub>6</sub>	S <sub>7</sub>	S <sub>8</sub>		

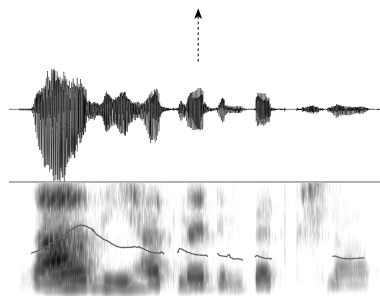


Figure 5: P-diagram and speech signal for example (18b).

The signal information in form of duration and mean fundamental frequency ( $f_0$ ) can be expressed in the corresponding categorical terms in form of prosodic units and accents (the ‘prosodic vocabulary’) at the interpretation level. P-structure, in a sense, thus also includes the phonetics (=‘signal’) - prosody (=‘interpretation’) interface. The high levels of  $f_0$  with a following fall in frequency (post-focal deaccentuation), and the long duration of the first syllable clearly indicate a strong pitch accent on *Ravi*.

The strong, early peak in the intonation phrase ( $\iota$ ) points towards a contrastive accent. As the annotation conventions in GToBI (Grice and Baumann, 2002) only

allow for the indication of pitch accents (H/L), this paper adopts the new DIMA annotation set (Kügler et al., 2019), which allows for a much more fine-grained annotation of the speech signal. Besides the annotation of tones, DIMA also proposes the independent marking of prominence levels, ranging from ‘none’ to level 3. While a typical pitch accented syllable corresponds to level 2, level 3 in combination with a H\* accent is very likely to indicate superior prominence (e.g., with a contrastive or corrective meaning). The addition of prominence levels to the representation thus allows to distinguish between different types of pitch accents. There might be several accents labelled with H in one sentence, but it is only the one with a prominence level of 3 that is of importance for the estimation of the scope of negation.

During the transfer of structure (‡), which exchanges information on syntactic and prosodic constituency (Bögel, 2015), and on intonation (Butt et al., 2017), the contrastive pitch accent becomes available to syntax. The following annotation, which can in principle be combined with any node, checks whether the associated material carries prosodic prominence in p-structure.<sup>10</sup> If this is the case, an attribute [PROM = +] is included in the f-structure of the prosodically prominent element.<sup>11</sup> In principle, this could also be extended to include different types of prominence as discussed in Baumann et al. (2007).

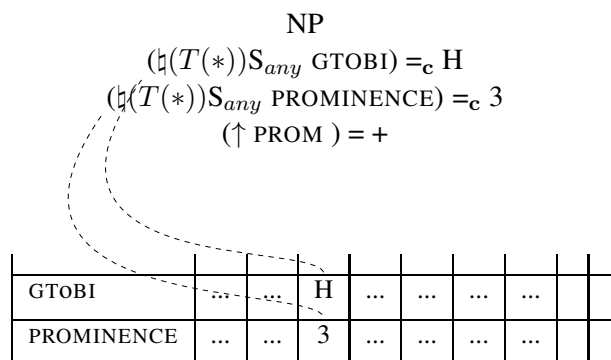


Figure 6: The annotation for a contrastive focus at the prosody-syntax interface

The reference to p-structure can be rewritten as a meta-category which routinely checks the prosodic status of every terminal node in c-structure. If, for example, *Bett* in example (18) had a prominent accent, the following f-structure would be generated.

<sup>10</sup>The annotation can be read as: For all terminal nodes T of the current node \*, there must be a (any) syllable S for which the attribute GToBI has the value H\*, and a syllable for which the attribute PROMINENCE has the value 3.

<sup>11</sup>The answer to the question, whether this should be a non-binary PROM feature or whether [PROM = -] is a useful addition to the feature system has to be left to further research in prosody.

$$(19) \left[ \begin{array}{l} \dots \\ \text{OBL-DIR} \left[ \begin{array}{l} \text{PRED 'im' \langle OBJ \rangle} \\ \text{OBJ} \left[ \begin{array}{l} \text{PRED 'Bett'} \\ \text{PROM +} \end{array} \right] \end{array} \right] \\ \text{ADJ} \left\{ \left[ \begin{array}{l} \text{PRED} \\ \text{ADJUNCT-TYPE} \end{array} \right] \left[ \begin{array}{l} \text{'ed'} \\ \text{neg} \end{array} \right] \right\} \end{array} \right]$$

where  $\text{neg} <_f \text{OBL-DIR}$

Prosodic prominence can ultimately only be interpreted through the combination of the information from all modules. With the semantically neutral PROM feature, a premature interpretation in terms of semantics/pragmatics is avoided; it is only in combination with the negation operator and linear scope that meaning can be constructed, for example, along the lines proposed in Zymła et al. (2015) and in terms of possible worlds for the QUD.

## 5 Conclusion

This paper discussed the topic of negation in German and the Swabian dialect. By means of a large corpus study of spoken language, the paper looked at how negation interacts with linear word order and prosody on the one hand, and compared the distribution of the two distinct negation particles in Swabian, *ed* and *edda*, with the Standard German negation particle *nicht*. With respect to the distribution, it was shown that *edda* only occurs at the end of the clause, while *ed* can occur in every position. However, at the end of the clause, *ed* only seems to allow for a very narrow scope, while the scope of the negation particle *edda* seems to be broader.

With respect to the scope of negation in prosodically unmarked sentences, negation usually scopes over the following element/constituent. However, this pattern can be overwritten via prosodic prominence, which can shift the scope of the negation particle to the prosodically prominent element. Prosodic prominence can be captured easily via the syntax-prosodic interface proposed in Bögel (2015). In the presence of a contrastive accent, a PROM feature is projected to the element's f-structure. C-structure thus serves as a pivot between p-structure and semantics/pragmatics, enabling the grammar to detect meaningful prosodic patterns; essential for any language which signals information-structure via prosody. With its modular architecture, LFG provides the perfect environment for an analysis of negation on multiple levels, while simultaneously, complex phenomena like negation prove to be valuable test cases for the research at the interfaces.

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