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CROSS-BORDER INTELLIGIBILITY – ON THE INTELLIGIBILITY OF LOW GERMAN AMONG SPEAKERS OF DANISH AND DUTCH

Abstract (Deutsch)

Entlang der deutsch-dänischen und deutsch-niederländischen Staatsgrenzen haben sich Bruchstellen im niederdeutschen Dialektkontinuum herausgebildet. Im vorliegenden Beitrag untersuchen wir, wie sich die Entstehung solcher Bruchstellen auf die Verstehbarkeit der dialektalen Varietäten über die Grenze hinweg auswirkt. Auf Grundlage der Ergebnisse eines Experiments wird zu diesem Zweck das Hörverständnis niederdeutscher Wörter bei dänischen und niederländischen Testpersonen aus grenznahen und grenzfernen Gebieten verglichen. Es stellt sich heraus, dass die grenznahen Testpersonen in den Nordost-Niederlanden das Niederdeutsche signifikant besser verstehen als die grenzfernen Testpersonen.

In Dänemark hingegen ist der Unterschied zwischen den grenznahen und grenzfernen Testpersonen nicht signifikant. Weiterhin zeigt sich, dass die niederländischen Testpersonen mehr niederdeutsche Wörter verstehen als die dänischen. Auf Grundlage einer Analyse auf der Wortebene kann gezeigt werden, dass die grenznahen Testpersonen in den Niederlanden vor allem solche niederdeutschen Wörter besser verstehen, die den dialektalen Varietäten des Grenzgebiets ähnlicher sind als ihren standardniederländischen Entsprechungen. Bei den dänischen Testpersonen ist das hingegen nicht der Fall. Das dialektale Kontinuum an der deutsch-niederländischen Grenze scheint somit noch erhalten zu sein, während es an der deutsch-dänischen Grenze bereits stark geschwächt ist.

Abstract (English)

The Low German dialect continuum has been disturbed by national borders – to the north along the Danish-German border, and to the west along the Dutch-German border. In combination with strong standardization processes in both countries this has resulted in growing distance between the dialects spoken on both sides of these borders. In this article, we describe research conducted into the linguistic consequences of the two state borders, not only on the structure of the varieties themselves, but also on the mutual intelligibility across the borders. In the Netherlands, the intelligibility scores of subjects from the border area were significantly higher than those of non-border subjects.

In Denmark, however, the difference in intelligibility scores between the border group and the non-border group was not significant. Furthermore, the results show that Dutch subjects understand more Low German words than Danish subjects do. An analysis of the results on the level of the word shows that Dutch subjects often score better when confronted with Low German words resembling dialectal North-Eastern Dutch words more than their Standard Dutch counterparts. Similar results were not found for Danish subjects. Our results indicate that the

continual relationship between North-Eastern Dutch and Low German is still existent, while it is much weaker in the German-Danish situation.

1 INTRODUCTION

Dialects mostly relate to each other continually, i.e. dialects which are geographically close to each other usually share more common features than dialects geographically further apart. Nevertheless, research has shown that such dialectal continua can be broken up. One reason for such breaks in continua is identified in state borders. It has been observed that new dialect borders are sometimes established along the lines of state borders. Since standard languages developed in strong connection with the establishment of nation states (cf. AUER 2005a), standardization is considered a main reason for the new dialect borders coinciding with the state borders: In addition to inter-dialectal, i.e. horizontal leveling, the dialects became increasingly influenced by the standard language which resulted in vertical leveling towards the standard variety (cf. AUER 2005a and b, HINSKENS et al. 2000, HINSKENS 2005).

For example, in the West Germanic language area, a break in the dialect continuum has been described in detail for the whole borderline between the Netherlands and Germany (cf. CORNELISSEN 1995; GIESBERS 2008; HINSKENS 1993; KREMER 1979, 1990; NIEBAUM 1990, etc.). Since the standard languages have obtained a rather strong position both in the Netherlands and in Germany, standardization and de-dialectalization are often described as the main reasons for this process. The dialects have changed in the direction of the standard language which they belong to, according to the nation state they are spoken in. Therefore they have developed in different directions, i.e. Dutch dialects have incorporated more and more features of the Dutch standard variety, and German ones features of the German standard variety (cf. HEERINGA et al. 2000, KREMER 1996). As a result, the linguistic distance between dialects on both sides of the border has rapidly increased since the end of the nineteenth century, especially in the post-war period.

In this article, we will describe research conducted on the linguistic consequences of two state borders, not only on the structure of the varieties themselves, but on the mutual intelligibility of continually related dialects. Varieties which are structurally close to each other tend to be more intelligible than varieties further apart (cf. BEIJERING / GOOSKENS / HEERINGA 2008, GOOSKENS 2007). When they are too far from each other, mutual intelligibility becomes impossible. When new dialect borders are introduced along the state border lines, it is possible that this results in decreased intelligibility when compared to the old continuum.

Although some research on perceptual distances has been integrated into the study of border dialects (cf. GIESBERS 2008, KREMER 1984), most of the research on border dialects conducted in recent years is based on production data. Our research shifts the focus towards perception using functional intelligibility scores. In contrast with previous research on perceptual distances, we do not ask subjects to

judge the distance of a dialectal variety, instead asking them to attempt to understand the variety. The results are therefore expected to be less affected by social stigmatizations than those of experiments triggering subjective judgments.

We investigate two regions where dialect continua have been affected by the establishment of national borders: The northern part of the Dutch-German border region including the provinces of Groningen and Drenthe (the Netherlands) and Eastern Frisia and Emsland (Germany), and the Danish-German border region including Southern Jutland (Denmark) and Middle Slesvig (Germany). In an intelligibility experiment we had Dutch and Danish subjects from regions close to the border with Germany and from non-bordering regions translate isolated nouns from the Low German variety of Bremen. The aim was to test if the old dialect continua can still be traced, i.e. if the subjects living close to the border still have higher intelligibility scores than the subjects from non-bordering regions, or if the state borders already have had such a strong effect that users from the border regions do not have any advantage from their dialectal knowledge any more.

Since the regions under consideration are both politically and linguistically characterized by rather different historical backgrounds, in section 2 we will shortly review their history, their dialectal relation to Low German, and the research conducted on the effect of the state border. The section finishes with the hypotheses to be investigated. Section 3 presents the data and method used in our intelligibility experiment. In section 4, we present the results, which are discussed in section 5.

2 BACKGROUND: THE BORDER DIALECTS UNDER CONSIDERATION

In this section, we will give a brief introduction to the border dialects under consideration and account for their status inside the dialect continua. Since both the Dutch and the Danish subjects are confronted with a Low German dialect from the North Low Saxon sub-group, we will first introduce the North Low Saxon dialect continuum (section 2.1). After that, we focus on the Dutch-German and the Danish-German border areas (sections 2.2 and 2.3). From the characterization of both border areas, we will draw hypotheses for the study of cross-border intelligibility of Low German in section 2.4.

2.1 The North Low Saxon dialect continuum

North Low Saxon dialects are part of the Low German dialect group, which is distinguished from the High German dialects mainly due to the fact that it is not affected by the High German consonant shift. Low German is commonly divided into two main subgroups, the Western and Eastern Low German branches (cf. STELLMACHER 2000, p. 107–113). Western Low German dialects are spoken in the North-Western part of the Low German group, stretching from the Dutch border in the West to the Eastern borders of Lower Saxony and Westphalia and up to

the Danish border in the North. They can be subdivided into three main areas: the North Low Saxon group, and the Western and Eastern Westphalian groups. The dialect of Bremen, which is the variety chosen for the stimulus words in our experiments, belongs to the North Low Saxon group. With respect to the North-Eastern Dutch dialects, although they historically belong to a continuum with the Low German dialects in Germany, in our days it makes sense to classify them as a group of their own, because they have structurally diverged from their counterparts in Germany and converged towards non-Saxon Dutch varieties. NIEBAUM (2008a, p. 439) therefore distinguishes between the Dutch and German dialects by using their names in the different standard languages. The North-Eastern Dutch dialects are thus called 'Nedersaksisch', the German ones 'Niedersächsisch' (for discussion cf. also STELLMACHER 2000, p. 110). We refer to all these varieties as 'Low Saxon' in the remainder of this article.

Figure 1 shows a map sketching the Low German dialects. The light grey zones in the Netherlands and in Denmark show that there are transitional dialects which can be positioned between Low German and Dutch or Danish, respectively. The stimuli used in this study stem from the city of Bremen, which is geographically in the middle of both border regions where the intelligibility scores were obtained. These regions are the provinces of Groningen and Drenthe, the North-Eastern-most provinces of the Netherlands directly bordering with East Frisia and Emsland in Germany, and the former province of Southern Jutland, the Southern-most part of mainland Denmark which directly borders with the Middle Slesvig area in Germany. We present some of the variable features in the two sections below to stress the continual status of the North-Eastern Dutch and Southern Danish varieties. We focus on features which show the transitional position of these dialects between North Low Saxon on the one hand and non-border dialects and the standard languages of Dutch and Danish on the other hand. This transitional status provides the impetus here, as we are keen to determine whether people from these areas are better capable of understanding Low German than their countrymen with a different dialectal or a non-dialectal background.

2.2 The Dutch-German border region

The border between Germany and the Netherlands starts in the North where the river Ems opens out into the North Sea (the Dollart region), and runs about 567 kilometers in Southern/South-Western direction on the mainland, the southernmost points being close to the cities of Maastricht (the Netherlands) and Aachen (Germany). The dialects across the borders generally share many features, but in some regions they were especially close to each other before large-scale standardization resulted in rapid dialect change. One of these regions is found in the North-East of the Netherlands in the provinces of Groningen and Drenthe, which are home to the subjects tested in our experiment.
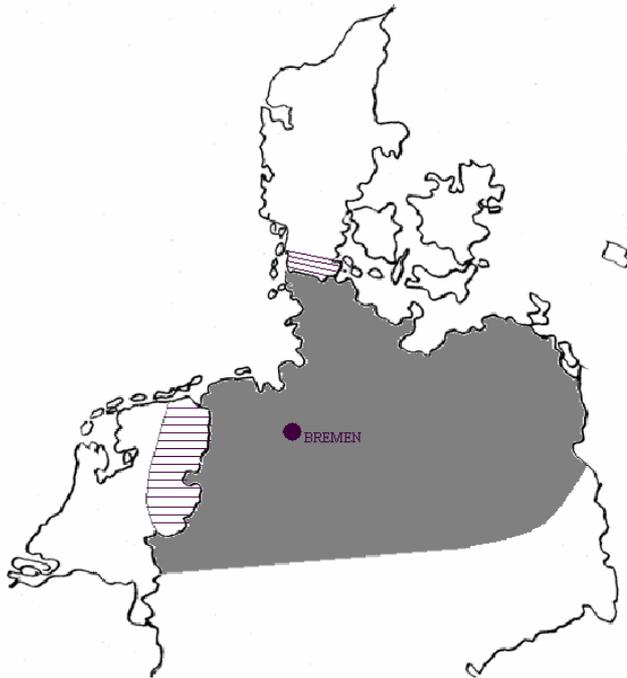
Fig. 1: *Map of Denmark, Northern Germany and the Netherlands showing the Low German dialect area. The transition areas are hatched. The dot indicates where the city of Bremen is situated*

The North-Eastern region has gone through a linguistic history of several linguistic 'expansions' from other dialects (a historical overview of the history of the North-Eastern Dutch dialects is found in NIEBAUM 2008b, cf. also HEEROMA 1963). The first expansion came from Westphalian dialects in the Middle Ages, the second expansion from Holland after 1600. From the nineteenth century onwards, the Dutch standard language has had more influence. Groningen and Drenthe dialects are characterized as sharing many features with the bordering dialects in Germany. Still, recent research has shown that the dialects along the border have undergone heavy changes in the direction of Standard Dutch (cf. HEERINGA et al. 2000, KREMER 1996, NIEBAUM 1990). Standard Dutch is historically based on Low Franconian dialects, which form a subgroup of their own in the Low German continuum with their transitional position between Low and Middle German.

We will now look closer at some of the main variants showing the transitional status of North-Eastern Dutch dialects between Low German and Dutch choosing variables that we expect to be perceptually striking. Since intelligibility is examined on the level of isolated, non-inflected nouns, we will focus on the word level and the phonological level.

With respect to the vocabulary, most of the frequently used words in the North-Eastern Dutch dialects are common with contemporary Dutch standard language, but some words have been preserved in dialectal forms, and some have differentiated from the standard language in meaning (cf. DAAN 2008). In detailed

historical studies, KREMER (1979, 1990) comes to the conclusion that dialectal words have been replaced by standard lexemes on both sides of the border (and especially in the Netherlands) to such a high extent that the Dutch-German border has become a clear-cut isolex. REKER (1996) draws similar conclusions based on data from the region of Groningen. When relating the lexicon to the German Low Saxon dialects, it should be kept in mind that despite the standard influence, Dutch and German still share a large number of cognate lexemes and therefore have rather similar lexicons. This fact has even led to the conclusion that mutual intelligibility between Dutch and German is possible to a limited degree (cf. HÁZ 2005). Therefore, substituting dialectal lexical items by standard ones does not mean that the lexicons of Groningen dialects and German Low Saxon dialects become totally different, but at least differences increase.

With respect to phonological features, let us examine some examples showing the intermediate position of the North-Eastern Dutch dialects between Dutch and Low German. We will base the examples on the structure of old traditional dialects, but choose examples which are still rather typical, even though standard influence has, of course, led to reduced use. The inventory of sounds in the North-Eastern dialects is equivalent to that of Standard Dutch (cf. BLOEM-HOFF / KOCKS / NIEBAUM 2008, REKER 2008), which places it closer to Standard Dutch than to Low German. Still, some of the sounds are distributed in the words in a manner more similar to the Eastern neighboring varieties than the Western ones. Characteristic for the North-Eastern dialects is [ɔ:] as an equivalent of Standard Dutch [ɑ:] (cf. WEIJNEN 1966, p. 211) in words such as [zɔ:l], Standard Dutch *zaal* [zɑ:l] 'hall'. The same is characteristic of the German Low Saxon varieties, so North-Eastern Dutch is closer to Low German in this respect (cf. Low German [zɔ:l], GOLTZ / WALKER 1990, p. 39; STELLMACHER 2000, p. 130). Another variant distinguishing North-Eastern Dutch varieties from the Dutch standard language is that they have not taken part in the diphthongization processes of long *û* and *î* which are characteristics of Standard Dutch (cf. WEIJNEN 1966, p. 459). We can say the same about the Low German varieties (also in opposition to the High German standard variety, cf. STELLMACHER 2000, p. 55). Where Standard Dutch has diphthongization of old [u:] to [œy] (e.g. *huid* [hœyt] 'skin'), North-Eastern Dutch and German Low Saxon keep the old monophthong: [hu:t]. Similarly, where Standard Dutch has diphthongized old [i:] to [ɛi] (e.g. *dijk* [dɛik] 'dike'), North-Eastern Dutch and German Low Saxon keep the monophthong: [di:k]. Another example of North-Eastern Dutch being closer to German Low Saxon than to Standard Dutch are secondary diphthongs from old *al-/ol-*combinations before a dental stop such as in *zout* [zaut] (cf. WEIJNEN 1966, p. 252). North-Eastern Dutch dialects – in parallel with German Low Saxon dialects – keep the liquid: Groningen [zɔ:lt], Low Saxon [zɔlt].

Table 1 summarizes the variables examined. It should be mentioned that we chose some variables rather arbitrarily, just to illustrate our point that North-Eastern Dutch dialects are located in an intermediary position between Standard Dutch and German Low Saxon, i.e. we could additionally name a high number of variables where North-Eastern Dutch is closer to Standard Dutch. Nevertheless,

the intermediary position makes us expect that some dialectal knowledge of Saxon varieties should make it easier to understand German Low Saxon than when access is constrained to Standard Dutch or non-Saxon varieties of Dutch.

	Low German	Groningen	Standard Dutch
Lexicon	mostly High German transferences	mostly standard transferences	Standard Dutch lexicon
Sound inventory	Low German	like Standard Dutch	Standard Dutch
old u:	monophthongal [huːt] 'skin'		diphthongal [hœyt] 'skin'
old i:	monophthongal [diːk] 'dike'		diphthongal [dɛik] 'dike'
old post-vocalic liquids	Liquid [zɔlt] 'salt'	[zɔːlt] 'salt'	secondary diphthong [zaut] 'salt'

Tab. 1: The North/Eastern Dutch dialects between Low German and Standard Dutch

Let us now briefly summarize the recent history of Dutch-German language contacts, and the dialectal change on both sides of the border. We mentioned above that, at least in their old forms, the cross-border dialects are often classified as belonging to the same dialect group, relating to each other continually. Therefore, they could be used as varieties for cross-border communication. This function of a 'lingua franca' (HINSKENS 1993) was rather central when the state border did not yet play a big role in everyday life, e.g. because regional working flow was still more important than the more centralized bureaucracy put forward by the modern nation states. Nevertheless, the use of dialects across the border has become increasingly seldom since the nineteenth century, and especially in the twentieth century.

GIESBERS (2008) shows that dialect use has continuously decreased in the Dutch-German region between Nijmegen and Venray (the Kleverland dialect continuum), especially in Germany. In parallel, the structural distance between the varieties on both sides of the border has strongly increased due to vertical dialect leveling. Since dialects are losing more and more domains of usage, and many children do not grow up with dialectal speech anymore, the assumption can be made that dialectal speech as a lingua franca is no longer a frequently available option. This is supported by the fact that Dutch-German cross-border contact has reduced considerably since World War II, as GIESBERS shows diachronically.

Rapid changes similar to those thoroughly investigated by GIESBERS have also been shown for other parts of the border region. BERNS / DALLER (1992) conduct a survey and test the intelligibility of Dutch and German subjects in another region of the Kleverlands continuum close to Arnhem.[1] They conclude that dialect use across the border is largely restricted to the older generation, while the younger generation mostly uses Standard German instead. KREMER (1979, 1990) offers

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1   Cf. also the summarizing report of research on this area in CORNELISSEN (2005).

detailed studies of word geography, showing that the border varieties have grown strongly apart (cf. also KREMER 1996). In yet another study, KREMER (1984) shows that the state border has developed into a subjective dialect border in the judgment of language users. Using computational and statistical techniques, HEE-RINGA et al. (2000) support KREMER'S view in the analysis of Dutch and German dialectal varieties in and around Bentheim: The dialects have strongly converged towards the respective standard languages.

Let us now turn to the border areas in the North-Eastern part of the Netherlands. NIEBAUM (1990) accounts for structural changes in the area north of the river Vechte. He shows that the state border did play a relatively minor linguistic role in the old dialect continuum, but that it has developed into a dialect border due to reduced cross-border contact after World War II, and the strong influence of the standard languages on both sides of the border leading to domain loss of the dialects. These tendencies are supported in a study by REKER (1996) on the loss of dialectal variants in favor of standard Dutch variants in Groningen, as observed in several surveys. REKER concludes that the Groningen variety is on its way from a Low German dialect to a variant of Dutch.

A study on dialect and standard use across the border in the Groningen-East Frisian region was conducted by HÖSCHEN (1985). He shows that dialect use among teenage subjects has lost ground in German East Frisia to a greater extent than in Groningen, since more domains are only seldom characterized by dialect use there (e.g., Low German is only seldom used in conversations with friends and school mates). Asked if they would use their dialect on the other side of the state border, the highest scores were found in places very close to the border, which coincided with a higher degree of contact. Even if they could use the dialect, nevertheless many pupils opted for using the neighboring standard language, if possible. The standard varieties are therefore likely to substitute dialects in cross-border communication.

2.3 The Danish-German border region

Denmark and Germany share a border of 67 kilometers on the mainland of Jutland, running from West to East right to the North of Flensburg. The rest of the border-line runs through the sea between the German mainland and the Danish islands. Historically the Danish-German border region is strongly connected with the former Duchy of Slesvig. Regions belonging to both countries today were part of this Duchy: the Northern-most part belongs to today's Denmark, while Middle and Southern Slesvig form part of Germany.

The current border was established in 1920. Prior to 1920, the region was sometimes part of Denmark and sometimes of Germany. The Duchy of Slesvig dates back to 1241. It has always been a multi-lingual region, not only shaped by Danish and Low German dialects, but also by other Germanic language groups with Frisian and Wendish dialects. With increasing standardization, the local dia-

lectal varieties of Low Saxon and Southern Jutlandic were also accompanied by the increased use of Standard Danish and Standard (i.e., High) German.

The Duchy of Slesvig was part of the Danish kingdom from 1460 on together with its Southern neighbor of Holstein. The region remained mostly multilingual with Danish in the northern and German in the Southern regions, but language policy included attempts to make the region Danish-speaking. After the Prussian-Danish war, in 1864 Slesvig became part of German-speaking Prussia. Only after the First World War, the current borderline was set in 1920, in accordance with the results of a referendum. Slesvig was a region confronted with different languages and language policies not only because of the political history, but also because the church administration was organized in two dioceses, the regions of which were not totally identical with those of the secular administration. The language of the diocese of Ribe was Danish, while the diocese of Schleswig had Low German as its administrative language.

If we want to characterize the areas as Danish or (Low) German-speaking according to the usual cultural language used, then the border has shifted from a line running from Husum to Schleswig northwards after 1800, i.e. the region between Schleswig and Flensburg became German-speaking in the nineteenth century. The main reason for this is probably that German was used at the schools since Middle Slesvig formed part of the Schleswig diocese (cf. PEDERSEN 2000, p. 137). Parents therefore shifted more and more towards speaking Low German with their children in the sparsely populated area of Middle Slesvig (cf. NIELSEN 1959, p. 59). Since the current border-line was drawn according to a referendum in 1920, it is consistent with the distribution of Danish-speaking and German-speaking majorities at that point of time, and still in our days. Danish- and German-speaking minorities are found on both sides of the border, i.e. the region remains bilingual and inhabitants are aware of the special bilingual status of this region (cf. PEDERSEN 2000 for more detailed information about the history of the Slesvig region).

The border-area between the Danish and German-speaking regions is the place where the North-Germanic and the West-Germanic dialect continua meet (cf. CHAMBERS / TRUDGILL 1998, p. 6). Whilst the Northern part of Slesvig has always been Danish-speaking, the Southern part was only settled rather late from the south by Low German speakers (cf. PEDERSEN 2000, p. 138). Low German and Jutlandic dialects have been in contact since that point in time, and the region has reached the multilingual character sketched above in the course of time. Nevertheless, Low German and Southern Jutlandic dialect relations are not as obviously continually related as the varieties at the Dutch-German border introduced above. The dialects are closely related, of course, but the region was characterized rather by bilingual speakers shifting between the varieties (cf. FREDSTED 2003) than by the use of ones own dialect as a lingua franca, as was the case in the Dutch-German border area.

Although the varieties are thus differently related than the Dutch and German varieties, the transition from West Germanic Low German to North Germanic Danish dialects is not totally abrupt. There are reasons to view the Southern Jutlandic variety as a transitional variety between the Low Saxon dialects and the

dialectal Danish varieties further north of the border. As with the Groningen va-
rieties sketched above, we provide some examples supporting this view of a tran-
sitional variety. For this purpose, we will sketch the old dialects before the strong
de-dialectalizations (cf. NIELSEN 1959 for Danish, and STELLMACHER 2000 for
Low German varieties).

When looking at the vocabulary, the idea that Southern Jutlandic is a variety
positioned between Low German and Standard Danish seems counter-factual im-
mediately: the Southern Jutlandic lexicon consists mostly of North Germanic
roots, sharing with the Low German dialects only the common words kept up sin-
ce Proto-Germanic, and some loan words from Low German (and newer common
loans). Words like Southern Jutlandic/Standard Danish *barn* vs. (Low) German
Kind and the 1st sg pronoun Southern Jutlandic *æ* vs. Low German *ik* may illus-
trate this. In vocabulary, Southern Jutlandic is thus tightly connected to the
neighboring Jutlandic dialects in the north, and basically only connected to the
southern neighbors through the common ancestry in Proto-Germanic.

Taking a look at some phonological variables, the impression of a continuum
between Low German and Danish dialects becomes more likely: First of all, all
the Jutlandic dialects are characterized by the apocope of final schwa, as opposed
to the island dialects and Standard Danish, cf. Jutlandic *ask* vs. Standard Danish
aske 'ashes'. The same is true for, if not all, then at least the directly bordering
varieties of Low Saxon (cf. STELLMACHER 2000, p. 130). Another common fea-
ture of Southern Jutlandic and Low Saxon, although less regular, is the fricativa-
tion of final *g* towards [x] (cf. DYHR 1990, p. 35), cf. Southern Jutlandic/Low
German [tɔx] 'train', [fax] 'compartment'. Standard Danish usually has a secon-
dary diphthong in corresponding cases, cf. *tog* [tɔːʔw], *fag* [faːʔj].

A morphosyntactic feature can illustrate that Southern Jutlandic (together with
Western Jutlandic varieties) in some respects is even closer to the Low German
dialects than to North Germanic varieties in general. While Scandinavian varieties
usually express definiteness morphologically by means of a suffix (cf. Standard
Danish *hund-en* 'dog-the' 'the dog'), this is not the case in Southern Jutlandic and
the dialects of Western Jutland. Instead, we find a pre-determining article here, in
parallel with the Low German dialects (and actually the whole West Germanic
dialect continuum), cf. Southern/Western Jutlandic *æ hund*, Low German *de Hund*
'the dog'. Thus, Southern and Western Jutlandic are the only North Germanic va-
rieties sharing this variant with the West Germanic varieties.

The variables are summarized in table 2. We interpret these variables as indi-
cators of a transitional status of Southern Jutlandic between Low German and
Danish.

Let us now take a look at language change in the border region in recent times.
In common with the Dutch-German border region, the Danish-German border
region is characterized by a strong de-dialectalization. Danish is even called 'one
of the most standardized languages in Europe' by I. L. PEDERSEN (2003, p. 9).
Still, the peripheral dialect of Southern Jutland is one of the best preserved dialec-
tal varieties of Danish, although strongly regionalized. K. M. PEDERSEN (2003)
reports on research conducted in 1977 and 1987. Both investigations built on sur-

veys of the language used at school. In 1977, nearly one half of the teenagers who took part still used the dialectal variety at school, and only 23 percent used Standard Danish, while the rest used the regionalized variety. In 1987, regional Southern Jutlandic had become the main variety used at school, while dialect use had become unusual. Although two thirds of the pupils still considered themselves capable of using the local dialect, parents only considered half of these pupils to be dialect speakers. The subjects showed a high variability in accommodation by adapting to dialectal varieties as well as the interviewers' standard variety. Southern Jutlandic is in our days characterized by a variety continuum ranging from local dialectal forms over regiolect to Standard Danish (cf. also DYHR 1990). K. M. PEDERSEN (2003, p. 133) considers the regiolect to have the strongest position today. This means that the influence of the standard languages has resulted in a stronger dialect border, but that Southern Jutlandic – as a variety closer to Low German than any other dialect of Denmark – is still in use.

	Low German	Southern Jutlandic	Middle and Northern Jutlandic	Standard Danish
Lexicon	mostly West Germanic	mostly North Germanic		
	Kind 'child' *ik* 'I'	*barn* 'child' *æ* 'I'		*barn* 'child' *jeg* 'I'
Schwa apocope	schwa apocoped			schwa not apocoped
	asch 'ashes'	*ask* 'ashes'		*aske* 'ashes'
Final *g*	fricative			secondary diphthong
	[tɔx] 'train', [fax] 'subject'			[tɔːʔw] 'train', [faːʔj] 'subject'
Definiteness	syntactic (article)		morphological (suffix)	
	de Hund 'the dog'	*æ hund* 'the dog'	*hund-en* 'dog-the' 'the dog'	

Tab. 2: Southern Jutlandic between Low German and Danish

2.4 Hypotheses

We have seen that the two regions under consideration are both characterized by dialectal continua. The Dutch and Danish dialects close to the border have been linguistically transitional between Low German and the dialects of Dutch and Danish. Although standardization had a large impact on these varieties, they are still closer to Low German than the non-Saxon varieties of the Netherlands and any other dialectal varieties in Denmark. We therefore expect that the continuum is still represented in intelligibility scores, although new dialect borders have originated. Our first hypothesis is therefore:

1. The intelligibility scores of subjects from the Dutch and Danish border regions with dialectal access are higher than those of subjects from regions further away from the border.

We have also seen that the border dialects relate to each other continually, but in different ways: While the dialects in the Dutch-German border region were so close that they could be used as a lingua franca in cross-border contacts, the Danish-German border region was characterized by bilingual use of Danish and Low German varieties. The transition from West Germanic to North Germanic is not as smooth as that inside the West-Germanic continuum at the Dutch-German border, and it can be predicted that the linguistic distance between Southern Jutlandic and Low German will be higher than between Groningen dialects and Low German. We therefore expect that the border will have a less sizable effect for Danish subjects than for Dutch subjects. Our second hypothesis therefore is:

2.   The border effect is larger for the Dutch subjects than for the Danish subjects.

In the following, we will report on the experiment we conducted to test these hypotheses.

3 INTELLIGIBILITY EXPERIMENT

To test word intelligibility, an internet-based experiment was conducted.[2] In this experiment, Danish and Dutch subjects were confronted with 369 isolated Low German nouns.[3] Such a large number of words allows for a detailed analysis of the kind of problems that listeners meet when listening to words in a closely related language. The nouns were randomly selected from a list of 2,575 highly frequent words. In a pre-test, we assured that all the nouns were known to subjects from the test group, i.e. high school pupils aged 16–19. The 369 words were read aloud by a male native speaker of Low German from Bremen[4] and recorded in a professional sound studio.

92 Dutch and 73 Danish high school pupils participated in the experiment. Since we wanted to compare the intelligibility among subjects living close to the German border to the intelligibility of subjects living in other parts of the countries, the subjects from both countries were divided into two groups, referred to as the border group and the non-border group. There were 65 subjects in the Dutch border group and 27 in the non-border group. For Danish, the numbers were 25 and 48. The subjects were asked a number of questions about their background before they participated in the experiment. Some of the information is summa-

rized in table 3. We see that the Dutch subjects are a little younger than the Danish subjects (a difference of 0.6 years for the border subjects and of one year for the non-border subjects) and that the Dutch border subjects are 0.4 years older than the non-border group while the two groups have the same age in Denmark. The Dutch border subjects have had German at school for a longer period (4.1 years) than the non-border group (3.3 years) and the Danish subjects have values in between (4.0 and 3.9 years).

The 65 subjects from the Dutch border group all came from the provinces of Groningen and Drenthe in the Northern part of the Low Saxon area. We chose to concentrate on this limited part of the Low Saxon area to ensure a homogeneous dialectal background of the listeners. The dialects spoken in the places where the speakers come from are part of a coherent dialect group. They all belong to the dialect group that HOPPENBROUWERS / HOPPENBROUWERS (2001, p. 65) refer to as the Low Saxon central group. The 27 subjects in the non-border group came from the provinces of Zeeland (Hulst) and Flevoland (Almere) that are not adjacent to the German border. All of the 25 Danish subjects from the border group came from Sønderborg close to the German border. The 48 non-border subjects came from various places on Funen, Sealand and Jutland (except from the southern part).

	Dutch subjects		Danish subjects	
	Border	Non-border	border	Non-border
Number	65	27	25	48
Gender	F 28, M 37	F 17, M10	F 25, M5	F 36, M 14
Age	16.5	16.1	17.1	17.1
Years German	4.1	3.3	4.0	3.9

Tab. 3: Number of subjects, gender, mean age, number of years of German lessons at school per group of listeners and number of responses per word block

In addition to the 65 Dutch border subjects, there were 32 subjects from Groningen who expressed that they were not familiar with the local dialect. These subjects were not included in the analysis because we did not expect them to have the same advantage as the subjects who were familiar with the dialect. All subjects from the Danish border group were familiar with the local dialect. Furthermore, we also did not include one Dutch subject and one Danish subject because they clearly were not serious about the task and did not even attempt to complete a large number of translations.

The experiment would have been too arduous if all subjects had had to translate 369 test words. Therefore, each subject heard only one word block consisting of about one quarter of the 369 Low German words. The choice of the words and the order of presentation were randomized in order to reduce tiredness effects. Since the word blocks were automatically assigned to the subjects in random order, some word blocks were presented to more subjects than others. The lowest number of Dutch subjects who heard a word block was 22 and the highest number

23. For the Danish subjects there was between 17 and 23 responses per word block. The subjects were requested to write the translation in their mother tongue (Danish or Dutch) in a text field within ten seconds. Prizes were offered to the highest-scoring participants in an attempt to encourage them to complete the tasks to the best of their ability.

The results were automatically categorized as right or wrong through a pattern match with expected answers. The Danish answers that were categorized as wrong were subsequently checked manually by a Danish mother tongue speaker and the Dutch answers were checked by a Dutch mother tongue speaker. Responses that deviated from the expected responses due to a mere spelling error were counted as correct identifications. Spelling errors were objectively defined as instances where only one letter had been spelt wrongly without resulting in another existing word. So, for example the mistake in *ærende* (correct *ærinde*) 'errand' is considered a spelling mistake and therefore counted as correct (only one wrong letter without resulting in another existing word), while *aske* (correct *æske* 'box') was not counted as correct because the spelling mistake results in an existing word meaning 'ashes'. Some Low German words have more than one possible translation. For example the Low German word *Laden* was sometimes translated into Dutch *winkel* and sometimes into *boetiek* both meaning 'shop'. Both translations were counted as correct. In the case of homonyms, both possible translations were accepted as correct. For example, Low German *översetten* can be translated correctly into Dutch *vertalen* 'translate' or *vertaling* 'translation'.

After this procedure, we had obtained a score of zero (word not identified) or one (word identified) per word for each subject. We then calculated the percentage of correct translations per word. This percentage was the intelligibility score per word.

4. RESULTS

In this section we will first present the overall intelligibility results for each group of listeners. Next, we will take a closer look at the intelligibility of the individual words.

4.1 Overall intelligibility results

In table 4 we present the mean percentage of correct translations of the Low German words by the Dutch listeners (left part of the table) and the Danish subjects (right part). The results have been broken down for the border groups and the non-border groups. In addition to the mean percentage of correct translations of all words, we present the results broken down for cognates and non-cognates.

Words	Dutch subjects				Danish subjects			
	N	Border	Non-border	Sign. (*df* = 90)	N	Border	Non-border	Sign. (*df* = 71)
Cognates	302	67.0	61.9	** (*t*=-3.258)	292	58.5	56.7	ns (*t*=-.829)
Non-cogn.	67	11.6	8.1	ns (*t*=-1.699)	77	9.8	9.3	ns (*t*=-.324)
Total	369	57.1	51.9	** (*t*=-3.427)	369	49.1	47.3	ns (*t*=-.872)

*Tab. 4: Percentages of correct translations of cognates, non-cognates and all words broken down for listener group (border or non-border). ** indicates that the difference between the border and the non-border group is significant at the .01 level. "ns" means that it is non-significant*

Looking first at the intelligibility among the Dutch listeners, we see that as expected (hypothesis 1), the subjects from the border are significantly better at translating the 369 Low Saxon words than non-border subjects (57.1 versus 51.9 percent). When looking at the cognates only, the difference is significant too (67.0 versus 61.9 percent), but this is not the case for the non-cognates (11.6 versus 8.1 percent).

The Danish border subjects are slightly better at translating the 369 Low German words than the non-border subjects (a mean percentage of correct translations of 49.1 versus 47.3), but the difference is not significant. Also when looking at the cognates and the non-cognates separately the differences are non-significant. This rejects hypothesis 1 that it is easier for Danish subjects from the border area to understand Low German than for non-border subjects.

Comparing the Dutch results to the Danish results, we see that the Dutch subjects translate a larger percentage of Low German words correctly than the Danish subjects. The difference is significant at the 0.01 level for the cognates, both when comparing all listeners from the two countries ($p < .01$, $t = 7.284$, $df = 195$) and when comparing the border groups ($p < .01$, $t = 4.702$, $df = 120$) and the non-border groups ($p < .01$ $t = 2.965$, $df = 73$). Only when comparing the Danish border group to the Dutch non-border group is the difference no longer significant ($p = .203$, $t = 1.291$, $df = 50$). These results show that in general, it is easier for Dutch subjects to understand Low German than for Danish subjects.

4.2 Individual words

The results presented in the previous section show that the Dutch listeners living near the German border find it easier to understand Low German than listeners from other parts of the country. The differences between listeners from the Danish border and the non-border subjects was not significant.

There are two possible explanations for the fact that the listeners from the Dutch border area understand more Low German than the other Dutch listeners. Firstly, there may be a greater chance that listeners from the border area have had more contact with Low German than other subjects. If this is the case, they are likely to know certain words and sound correspondences between the dialect spo-

ken in their own area and Low German and to understand more cognates than the non-border group. However, this explanation is not strongly supported by the intelligibility results of the non-cognates in table 4, which show that the border group do not translate the non-cognates significantly better than the non-border group. Non-cognates are by definition unintelligible unless the subjects have learned the words via contact with Low German or are able to understand them via the High German equivalents that they learnt at school. On the other hand we saw in table 3 that the border group has had German lessons for a longer period than the non-border group and it can be expected that listeners have some advantage from their knowledge of High German when listening to the Low German words.

A second possible explanation for the higher scores among the border group in the Netherlands is that the dialects spoken close to the border are still part of the Low Saxon dialect continuum. As shown in Section 2.2, the Dutch dialects along the border have certain sounds in common with Low German. Such linguistic similarities are likely to make it easier for the border group to recognize the Low German cognates.

So there are two factors which may play a role in explaining the superior performance of the Dutch border group in comparison to the non-border group, namely contact and linguistic similarity. In connection with this, it is worth mentioning that the subjects from Groningen who had been left out of the experiment because they had said that they were not familiar with the local dialect (see Section 3) did not turn out to perform less well in the translation task than the subjects who said to be familiar with the dialects ($p = .38$, $t = -.885$, $df = 95$). On the one hand this may show that contact is the most important explanation for the better performance of the border group. On the other hand it seems reasonable to assume that even subjects who said that they were not familiar with the local dialect still have some passive knowledge of the language varieties spoken in the area. This knowledge may still give them some advantage in the intelligibility of Low German.

In order to get an impression of the role that the two factors, contact and linguistic similarity, play in the explanation of the higher intelligibility scores among the Dutch border group we took a closer look at the individual words that were easier to understand for the border group than for the non-border group. We calculated the intelligibility scores per word for the border group and for the non-border group. Next, we looked at the words with an intelligibility score that differed by more than 15 percent between the two groups. This percentage is arbitrarily chosen, but in our opinion shows that there is a substantial difference between the two groups that is not merely due to coincidence. We split the data into different categories, see table 5.

In order to be able to compare the linguistic basis that the border group had for understanding the Low German words to that of the non-border group we needed information of the linguistic characteristic of the three varieties involved, namely Low German as pronounced by the speaker in the experiment, Standard Dutch and the Low Saxon dialect spoken in the area where the subjects from the Dutch border group live. We therefore made phonetic transcriptions of the test

words as pronounced by the Low German speaker in the intelligibility experiment. Next, we made transcriptions of the Standard Dutch pronunciation based on the knowledge of the transcriber who is a speaker of Standard Dutch herself.[5] The border group came from different places in the border area. In order to achieve transcriptions that would represent the whole area we made recordings of a speaker who is born and raised in Uithuizen and now lives in Bedum. These places are in the middle of the area where the listeners came from.[6]

	The Netherlands		Denmark	
More similar to Low German	17	(33.3%)	14	(19.7%)
morphology	2	(3.7%)	0	(0.0%)
pronunciation	15	(29.4%)	14	(19.7%)
Not more similar to Low German	34	(66.7%)	57	(80.3%)
non-cognates	7	(13.7%)	13	(18.3%)
cognates	27	(52.9%)	44	(62.0%)
Total	51	(100%)	71	(100%)

Tab. 5:   The numbers and percentages of words that are translated at least 15 percent better by the border group than by the non-border group in the Netherlands and Denmark, split up into words in the border dialect that are more similar to Low German and words that are not

There were 25 words that the non-border group understood more than 15 percent better than the border group. The mean difference between the two groups for these 25 words is 23.2 percent with a range between 15.2 percent and 37.5 percent. We have no explanation for the fact that the intelligibility was higher for the non-border group for these words since all the border group listeners also know standard Dutch.

Twice as many words, namely 51 (see table 5), had a correct mean translation score that was more than 15 percent higher in the border group than in the non-border group. The mean percentage of correct translations for these 51 words was also higher (27.0 percent with a range between 15.2 percent and 62.5 percent) than the words that the non-border group translated better. We will take a closer look at these words.

In the case of 17 of the words (33.3 percent) the higher intelligibility among the border group can be explained by the fact that the border dialect is more similar to Low German than Standard Dutch. In 29.4 percent of the cases the phonetic form is more similar to the variety spoken in the border area than to Standard Dutch and in 3.9 percent of the cases the morphological form is more similar. Some examples of phonetically closer forms are given in table 6. There are two cognates that have the same derivative morphemes in the border dialect and in Low German. In both cases it is the Dutch morpheme *-ing* [ɪŋ] that corresponds to border dialect and Low German *-(e)n* [(ə)n], for example in the word for 'treat-

ment' that is *behandeling* [bəhandəlɪŋ] in Standard Dutch, [bəhanələn] in Dutch border dialect and [bəhanəln] in Low German.

Low German	Dutch border dialect	Standard Dutch	translation
[knɛj]	[knɛj]	[kni]	'knee'
[ʋi:n]	[ʋi:n]	[ʋɛjn]	'wine'
[bu:tnlant]	[butnlant]	[bœjtnlant]	'abroad'
[mɔnt]	[mɔ:nt]	[ma:nt]	'month'
[steɐn]	[ste:rn]	[stɛr]	'star'

Tab. 6: Examples of Low German words that are pronounced in a more similar manner and are translated 15 percent better by the border group than by the non-border group in the Netherlands

The intelligibility of another 34 words (66.7 percent) cannot be explained by the fact that the variety of the border group is closer to Low German than Standard Dutch. In these cases the better intelligibility of these words among the border group must be explained by more experience with Low German varieties. Either the subjects have heard the words before or the words contain sounds that the subjects are able to relate to the corresponding sound in their own variety. For example the Low German word *Garaasch* [garɔ:ʃ] 'garage' is pronounced as [xara:ʒə] in both Standard Dutch and in the border dialect. However, for the border group it may be easier to understand this word because Standard Dutch [a:] often corresponds to [ɔ] in both their own variety and in Low German like in for example the Low German word *Straat* [strɔ:t] pronounced as [strɔ:t] in the border dialect and as [stra:t] in Standard Dutch.

Seven of the 34 words (13.7 percent) are non-cognates. These words must be intelligible because of contact with a German variety, since the meaning cannot be deduced from the Dutch form. Some of the words are rather different from the High German form, which gives reason to think that the subjects must know the words from contact with Low German. An example is Low German S*tünn* [stʏ:n], Dutch *uur* 'hour', which is *Stunde* in High German.

Turning now to the Danish situation, we see that, like in the Dutch situation, the border group translated twice as many words correctly (71 words) in more than 15 percent of the cases compared to the non-border group (35 words). However, as becomes clear from table 5, a larger proportion of these words, 80.3 percent (versus 66.7 percent in the Dutch situation), must be attributed to contact, since the border dialect does not have a form that is closer to Low German than Standard Danish. There are more non-cognates among the words (18.3 percent) in Danish varieties than in Dutch (13.7 percent), for example Low German *Insel* [ɪnzəl] 'island', Standard Danish *ø* [ø:ʔ], border dialect [œjʔ].

Only 14 words (19.7 percent) have a border dialect form that is closer to Low German than the Standard Danish form (as opposed to 29.4 percent in Dutch). It is difficult to discover general trends among these words. Examples are given in

table 7. There are no cognate words that have the same derivative morpheme in the border dialect and in Low German but a different morpheme in Standard Danish.

Summarizing the results of the individual words, we see that a larger proportion of the words that are better recognized among the border groups are words that are more similar to Low German in the case of the Dutch group than in the Danish group. This is the reverse for words that are not more similar: a larger proportion of the words belong to this group in the case of Danish than in the case of Dutch. This suggests that linguistic similarities play a larger role in the Dutch situation and contact a larger role in the Danish situation.

Low German	Danish border dialect	Standard Danish	translation
[kow]	[kɔwʔ]	[koːʔ]	'cow'
[tɔx]	[tɒx]	[tɔːʔw]	'train'
[jak]	[jak]	[jagə]	'jacket'
[mɔnt]	[mɔːnt]	[mɔːnəð]	'month'

Tab. 7: *Examples of Low German words that are pronounced in a more similar manner and are translated at least 15 percent better by the border group than by the non-border group in Denmark*

5 CONCLUSIONS AND DISCUSSION

We conducted an experiment to test two hypotheses. The first hypothesis was that subjects from the border area both in the North-Eastern part of the Netherlands and in Danish Southern Jutland were better at understanding Low German words than subjects from non-bordering regions. When testing this hypothesis, we saw that this is indeed the case in the Netherlands: The intelligibility scores of subjects from the border area were significantly higher than those from the non-border subjects. In Denmark, however, the difference in intelligibility scores between the border group and the non-border group was not significant.

The second hypothesis was that the border effect would be higher for the Dutch subjects than for the Danish subjects, because North-Eastern Dutch is much closer to Low German than Southern Jutlandic is. Since there is no border effect in Denmark, but there is a clear border effect in the Netherlands, the effect is indeed higher for the Dutch subjects.

We based our hypotheses on the results of earlier work on the border dialects considered. In this earlier work, we found support for the claim that the German Low Saxon dialects and the North-Eastern Dutch dialects are part of an old dialect continuum which has been broken up due to influence of the standard languages on both sides of the borders. We had also good reasons for viewing Southern Jutlandic as a transitional variety between Low German and Danish, but with a smaller number of shared variables than at the Dutch-German border.

Our results indicate that the continual relationship between North-Eastern Dutch and Low German is still existent. The subjects from the border area under-

stand Low German not only better than non-border subjects, but also to a considerable degree (67 percent of the cognates). An analysis of the results on the word level has shown that the subjects often score better when being confronted with Low German words that resemble dialectal North-Eastern Dutch words to a higher degree than their Standard Dutch counterparts. This means that linguistic distance seems to play a major role. Linguistic distance can only play a role when the subjects still have access to a high number of words carrying dialectal features. In conclusion, although standardization and de-dialectalization are in progress, the North-Eastern Dutch subjects still have a rather good knowledge of dialectal features from their region.

Since we do not have access to production data from our subjects, we do not know what this dialectal knowledge looks like. Perhaps passive knowledge is a significant help when attempting to understand a closely related variety. In light of this, it is interesting to turn back to the results from the group of subjects which we excluded from the analysis, namely subjects from the North-Eastern part of the Netherlands who stated that they were not familiar with the local dialects. As we introduced in Section 4.2, we carried out the same analysis including these 32 subjects. It emerged that the group of North-Eastern Dutch subjects with dialect knowledge did not score significantly better in understanding Low German cognates than the North-Eastern subjects without dialect knowledge. This indicates that a passive knowledge of dialectal varieties (we can assume that the subjects are confronted with dialectal or regional speech when living in the area even if they do not claim to speak the dialect) provides the necessary help to understand Low German better than non-border subjects.

We have shown that the dialectal continuum between North-Eastern Dutch and German Low Saxon still exists when taking intelligibility into account. Nevertheless, since we do not have comparable diachronic intelligibility data, we cannot draw any conclusions about the change of inter-dialectal intelligibility. It is possible that the mean scores have decreased significantly, and it would be worth testing this in an apparent time design comparing our data with the intelligibility scores of older age groups.

Turning to the Danish subjects, we do not have indications for an existing dialectal continuum in intelligibility scores. The border subjects did not score significantly better than the non-border subjects when confronted with Low German words. The subjects from the border region were better at translating some words at the individual word level, but in contrast with the Dutch subjects these words were mostly not more similar to Low German in Southern Jutlandic than in Standard Danish. We thus found indications that there was a greater knowledge of Low German words due to higher contact in the border group, but knowledge of Southern Jutlandic dialects did not seem to help. Whether or not the existence of an old dialect continuum which enhanced understanding of varieties from across the border can be proven will have to be left as an open question. In this case, the dialects on both sides of the border would have been torn apart to a greater extent than in the case of the Dutch-German border due to regionalization and standardization, which is expected to be stronger in Denmark than in the Netherlands. We

would expect intelligibility scores to be higher for a group with deeper dialectal knowledge than that possessed by our test group, which could only be proven in a further study.

Nevertheless, the linguistic histories of the two border regions suggest an interpretation of the differences according to the contact situations. It has been shown in earlier research that the Dutch-German contact situation in the border regions has been characterized by the use of dialects until standard language gained influence in everyday contexts. In the Danish-German cross-border contacts, by contrast, code-switching between Danish and Low German was usually applied, suggesting that the knowledge of the dialect was not sufficient to understand enough of the cross-border varieties for successful communication. Instead, the cross-border variety had to be learned. This means that the dialectal break between the West Germanic and the North Germanic dialect continuum was likely to be too strong for continual variables to be of significant help in aiding mutual intelligibility.

In conclusion, the Dutch-German dialect continuum has been broken at the border, but it has not yet been destroyed. Intelligibility scores of Low German are still significantly higher in the Dutch border area than in the rest of the country. The Danish-German dialect continuum was probably much weaker. This is supported by the fact that subjects from the Danish border do not understand Low German words significantly better than non-border subjects. The results of our subjects invite historical studies on the change of intelligibility scores of Low German for the regions under consideration, most probably through the use of apparent time designs. Additionally, Low German varieties from regions closer to the border regions could be useful to study if the effect of the dialectal continuum grows with the reduction of geographical (and presumably linguistic) distance between the varieties.

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