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# *The effect of social factors on the comprehension of a closely related language*

## **1 INTRODUCTION**

The three mainland Scandinavian languages, i.e. Danish, Swedish and Norwegian, have a reputation of being mutually intelligible, which means that the speakers are able to communicate each using their own languages. However, in daily practice inter-Scandinavian communication sometimes fails. The results of a number of studies have shown that especially Danes and Swedes have difficulties understanding each other's language, while Norwegians are generally quite good at understanding the two neighbouring languages (see e.g. Delsing and Lundin-Åkesson 2005, Maurud 1976).

The level of inter-Scandinavian intelligibility may depend upon two kinds of factors: (1) linguistic distance between the languages at different linguistic levels (phonetics, vocabulary, morphology, and syntax), (2) non-linguistic factors such as attitude towards the languages of the other Scandinavian countries and experience with the other languages. In this paper we will focus on the role of non-linguistic factors for the intelligibility of Danish among Norwegians. Previous studies suggest that non-linguistic factors may contribute to the successful communication between speakers of closely related languages (Maurud 1976, Bø 1978, Börestam 1987, and Wolff 1959). The existence of negative attitudes or social stigmas attached to languages is often seen as a potential obstruction for successful intergroup communication. Ultimately, of course, the level of intelligibility also depends on the amount of experience with the other language(s), including formal instruction.

In the previous investigations of mutual intelligibility within Scandinavia, mentioned above, only listeners from the southern part of Norway close to the neighbouring countries were tested. It could be that informants who live further away, with fewer opportunities to visit neighbouring countries, have a lower level of intelligibility of the neighbouring languages. To investigate this we test the intelligibility of Danish among two groups of Norwegians, one from the southern part and one from the far north. These two groups have approximately the same linguistic prerequisites for understanding the neighbouring languages. Therefore, if a difference in intelligibility is found we have a strong indication that non-linguistic factors play a role for intelligibility of a neighbouring language. Our expectation is that the northern group has had less contact with Danish than the southern group because they live so far away from speakers of

the language. It is not clear beforehand whether there is a difference in attitudes towards Danish between the two groups of listeners, however.

## 2 METHOD

To test the intelligibility of spoken Danish among Norwegians we conducted a word intelligibility experiment via the Internet among a northern group and a southern group of subjects. To investigate the attitudes towards the Danish language and its speakers and the amount of contact with the language we also had the two groups of pupils fill in an in-depth questionnaire.

### *Subjects*

Subjects were recruited through secondary schools and were pupils who attended university preparatory courses. The northern group consisted of 12 pupils from the places Honningsvåg, Tana and Alta in Finnmark which is the northern-most province in Norway, more than 2000 kilometres from Denmark. The southern group was 13 pupils from Hønefoss in the province of Buskerud. The distance to Denmark for these speakers is approximately 300 km (see Figure 1). The dialects spoken in the northern and the southern areas are linguistically very similar (see Gooskens and Heeringa 2005). Both varieties can be said to be heavily influenced by the written standard Bokmål, and employ forms that are predominantly found in this codified variety.

The subjects were asked a number of questions about their background before they participated in the experiment. Part of the information is summarized in Table 1. We see that the mean age of the two groups of subjects is almost the same (16.4 versus 17.1 years). Both groups consist of approximately the same number of boys and girls. All of the subjects indicated that they spoke Norwegian with both their mother and their father so that it can be assumed that Norwegian is their first language.

*Table 1: Number of subjects, gender and mean age per group of listeners.*

	<b>Subjects</b>	
	<b>North</b>	<b>South</b>
<b>Number</b>	12	13
<b>Gender</b>	F 8, M 4	F 9, M 4
<b>Age</b>	16-18 (mean 16.4)	16-19 (17.1)



Figure 1. Map of Scandinavia showing where the test subjects lived.

#### *Intelligibility experiment*

To test intelligibility, an Internet-based experiment was conducted.<sup>1</sup> In this experiment, Norwegian subjects were confronted with 384 Danish isolated singular nouns in spoken form. The nouns were randomly selected from a list of 2575 highly frequent Dutch words and translated into Danish. We assume that this random selection of words is representative for the Danish language as far as their linguistic properties (for example the distribution of phonemes and percentages of non-cognates) are concerned. We preferred to test isolated words rather than a whole text because this gave us the possibility to control the input completely. The experiment that was used was developed to also be applicable for other studies, among others a study of which specific word characteristics influence intelligibility of a closely related language. Furthermore, the decoding of content words is central to understanding speech. As long as the subject correctly recognizes content words, he will be able to piece the speaker's message together. In a pre-test to the word comprehension experiment, we assured that all the nouns in the stimuli were known to subjects from the test group, i.e. high school pupils aged 15-18 years. The test words were read aloud by a male native speaker of Danish (from Frederiksberg near Copenhagen) and recorded in a professional sound recording studio.

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<sup>1</sup> The experiment also included other Germanic language pairs. It may be found on the Internet at <http://www.let.rug.nl/lrs>. It is possible to participate in the test with a guest account (login: germanic, password: guest).

The experiment would have been too arduous if all subjects had been given all test words. Therefore, each subject heard only one word block consisting of one quarter of the 384 words. The choice of the words and the order of presentation were randomized so that possible tiredness effects were neutralized. The subjects listened to the test words via headphones. They were requested to write the Norwegian translation into 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 from the word comprehension experiment were automatically categorized as right or wrong through a pattern match with expected answers. The answers that were categorized as wrong were subsequently checked manually. 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 *terrase* (correct *terrasse*) 'terrace' is considered a spelling mistake and therefore counted as correct (only one wrong letter without resulting in another existing word), while *hånd* (correct *ånd* 'spirit') was not counted as correct because the spelling mistake results in an existing word meaning 'hand'. Some words have more than one possible translation. For example, the Danish word *arbejde* was sometimes translated into Norwegian *arbeide* and sometimes into *jobb* both meaning 'job'. Both translations were counted as correct. In the case of homonyms, both possible translations were accepted as correct. For example, Danish *hær* can be translated correctly into Norwegian *her* 'here' or *hær* 'army'. After this procedure, we had obtained a score of zero (word not identified) or one (word identified) per word for each subject. We then also calculated the percentage of correct translations per subject, obtaining the intelligibility score per subject.

#### *Contact questionnaire*

After the intelligibility experiment had taken place, the subjects were asked to fill in the questionnaire with attitude and contact questions at home on a voluntary basis.

The subjects were asked questions about their frequency of visits to Sweden and Denmark and the frequency of Swedish and Danish linguistic input. The questions were the following:

1. 'How often have you been to Denmark?'
2. 'When did you last visit Denmark?'
3. 'How often do you hear Danish?'
4. 'How often do you talk to a Danish -speaking person?'
5. 'How often do you read Danish?'

As answer to questions 1, the subjects could choose between the following: 'never', '1 or 2 times', '3 to 5 times' or 'more than 5 times'. Question 2 could be answered with 'last year or more recently', '1 to 2 years ago', 'more than 3 years ago' or 'never'. Questions 3, 4 and 5 could be answered with 'never', 'less than once a year', 'a few times a year', 'once a month', 'once a

week', and 'every day'. 'In order to be able to calculate the mean contact scores, the answers were recalculated to an ordinal scale from 0-3 and 0-5 respectively.

#### *Attitude questionnaire*

To elicit the attitude of the subjects they were asked to characterise the neighbouring languages and the speakers. First, the subjects were asked directly about their attitude towards Danish: 'What do you think of the Danish language (please select the alternatives that you think describes Danish?)'. The alternatives are listed in Table 2. They are the negative and positive characteristics on the dimensions of dynamism, superiority and attractiveness as defined by Zahn and Hopper (1985). Some of the adjectives listed in Table 2 are antonyms, e.g. 'correct' - 'incorrect', while others do not have a positive or negative antonym.

The subjects were asked to give their opinion about the speakers: 'What do you think of Danes?' (see Table 2). The alternatives were presented in random order and the subjects could select as many characteristics as they liked.

*Table 2. Overview of the positive and negative adjectives that the subjects could chose to characterise the Danish language and its speakers (the adjectives have been translated from Norwegian)*

<b>Danish language</b>		<b>Danes</b>	
<b>negative</b>	<b>positive</b>	<b>negative</b>	<b>positive</b>
Incorrect	Correct	Reserved	talkative
Unattractive	attractive	poor	rich
Unalluring	alluring	self-centred	considerate
Repulsive	beautiful	insecure	self-confident
Un-cool	cool	unintelligent	intelligent
uncultivated	cultivated	bad-tempered	calm
boring	amusing	cross	happy
ugly	pretty	unserious	serious
unsexy	sexy	pushy	friendly
dull	interesting/fun	slow	cosy
tedious	cosy	dishonest	honest
		snobbish	not snobbish
		unsympathetic	sympathetic

Next the subjects were asked 'Would you like to live or study in Denmark?' They could answer 'yes', 'no' or 'maybe'. We assume for the sake of the analysis that a positive answer may signal a positive attitude towards Danish and Danes.

Finally, the subjects were asked how much of a Danish news item on the radio they think they would understand. They could choose between the following answers: '1-25%', '26-50%', '51-75%' and '76-100%'. In the strict sense this question may not measure the subjects' attitudes towards Danish, but still the answers express the expectations that they have when being

confronted with Danish. These expectations do not necessarily reflect how well the subjects are in fact able to understand Danish, however.

### 3 RESULTS

#### 3.1 Mean results

In the first row of Table 3 the intelligibility expressed as the mean percentages of correct translations of the spoken Danish words is presented for the two groups of subjects. Furthermore, the attitudes expressed as the mean number of positive and negative characterisations of the Danish language and Danes are presented. Finally, the amount of contact with the Danish language and Danes expressed as percentages is presented. In the last column of the table, the results of independent samples t-tests are given.

*Table 3. Results of the intelligibility tests and the attitude and contact scores for the northern and the southern group of subjects. The intelligibility scores are expressed as percentages, the contact scores as points (see above), the attitude scores are the mean number of points given by the subjects (see explanation in Section 2).*

	<b>Northern group</b>	<b>Southern group</b>	<b>sign. (df=23)</b>
intelligibility	76.3	79.6	$t = -1.015, p = 0.32$
contact:			
hear Danish (max 3)	2.5	2.85	$t = -1.082, p = 0.29$
talk to Danes (max 3)	1.27	1.42	$t = -0.382, p = 0.71$
read Danish (max 5)	0.83	1.85	$t = -1.727, p = 0.10$
frequency: visits to Denmark (max 5)	0.67	2.0	$t = -4.891, p = 0.00$
recentness: visits to Denmark (max 5)	0.67	2.0	$t = -3.913, p = 0.01$
attitude:			
positive towards Danish (max. = 11)	1.0	2.5	$t = -2.376, p = 0.03$
negative towards Danish (max. = 11)	2.5	1.7	$t = 0.843, p = 0.41$
understand Danish (max. = 4)	3.1	2.3	$t = 1.705, p = 0.10$
positive towards Danes (max. = 13)	1.8	4.5	$t = -2.947, p = 0.07$
negative towards Danes (max. = 13)	1.6	0.3	$t = 1.915, p = 0.07$
live or study in Denmark (max. = 2)	0.9	0.8	$t = 0.582, p = 0.57$

#### *Intelligibility*

The southern group translated a little more words correctly (79.6%) than the northern group (76.3%), but the difference is not significant ( $p = 0.32$ ). Since the data presented here are part of an investigation where the intelligibility of a larger number of subjects were tested (see note 1) we can compare the results of this small group of subjects to that of a larger group. The data set

used in the present analysis was smaller because only for this dataset also attitude and contact scores were available (see Section 2). In the large survey the intelligibility of 39 subjects from the north and 118 from the south were tested. These subjects translated 65.9% (northerners) and 65.0% (southerners) of the Danish words correctly. This percentage is lower than for the restricted dataset with 25 subjects, probably due to the fact that participation was obligatory in the large investigation. The subjects in the restricted set also volunteered to participate in the questionnaire and are probably more eager students. Most importantly, we find that for neither the large data set nor for the restricted data set the difference between the northern and the southern group is significant. This means that the restricted data set can be considered representative as far as the difference between the two groups is concerned. Both groups translated Danish words equally well.

#### *Contact*

In the second part of Table 3 it is shown how often the subjects have contact with the Danish language and its speakers. We see that on all contact scales southerners have higher scores than the northerners. The differences for the two first contact scales that are concerned with the spoken language are not significant. The difference in reading patterns is closer to being significant, (0.83 versus 1.85) but the difference is not as large as between the groups' frequencies of visits to Denmark (northerner's score is 0.67, and the southerners' 2.0). The southerners have also visited Denmark more recently (northerners score is 0.67 versus southerners' 2.0). Of the twelve northerners, five have never been to Denmark and only one has been 3-5 times. Only one of the thirteen southerners has never been to Denmark, while the rest of them have either been between 3 and 5 times (10) or more often, i.e. 5 or more times (2).

#### *Attitude*

We calculated the mean number of positive and negative characteristics chosen for Danish in the two groups of listeners (bottom part of Table 3). In general, the northern group is more negative about the Danish language than the southern group, while the northern group is more positive about their ability to understand Danish. The difference between number of positive characteristics of Danish is significant between the two groups. Many southerners find the Danish language beautiful, attractive and interesting, while the northerners more often characterise it as boring and unattractive. When asked to characterise the speakers rather than the language the southern group often chose the positive characteristics 'happy', 'jovial' and 'talkative' while the northern group often chose negative adjectives such as 'pushy', 'sluggish', 'snobbish' and 'unintelligent' to characterise the Danes.

The attitude data show that the southerners are more positive towards Danish and Danes than the northerners. It is possible that northerners in general tend to evaluate languages and their speakers more negatively than the southerners. In order to check whether this is the case, we compared the attitude results to attitude scores for Swedish and Swedes. These results are gained from a questionnaire with the same set-up about Swedes and the Swedish language as the questionnaire about Danish and Danes. The listeners came from the same schools and classes in the two geographic areas as the listeners who participated in the experiment testing the attitudes towards Danish and Danes. The results show that the northern listeners were not

significantly more negative towards Swedish and Swedes than the southerners on any of the scales. This shows that the northerners are not in general more negative in their judgments of languages and their speakers than the southerners. The negative judgments of Danish cannot be explained by a general negative attitude.

### 3.2 Correlations

#### *Relationship between contact and attitude*

The results presented in Table 3 show that in general southerners have more contact with and are more positive towards the Danish language than the northerners. To investigate whether there is a relationship between these two factors we correlated the ordinal contact scores with the attitude scores using a Spearman rho correlation. The results show that on most scales no significant correlations are found. However positive correlations are found at the 1% level for contact scores expressing numbers of visits to Denmark and the number of positive characteristics of the Danes (correlation coefficient .51). A positive correlation at the 5% level is found between the number of visits to Denmark and positive attitudes towards the Danish language (correlation coefficient .42). There is also a positive correlation at the 5% level between recentness of visits to Denmark and the number of positive evaluations given of Danes (coefficient .43) It is tempting to conclude from this that visits to Denmark result in positive attitudes, but it should be kept in mind that such correlations do not say anything about the causal relations. It is also possible that subjects who have a positive attitude go to Denmark more often. However, this possibility is smaller seen in the light of the fact that the listeners are so young that a positive attitude could not really have led to an increased contact pattern.

#### *Relationship between intelligibility and extra-linguistic factors*

It is generally assumed that a positive attitude and previous experience with a language will make it easier for a listener to understand it than when the listener has a negative attitude or little experience. The fact that the southerners in our investigation generally have more contact with, and are more positive towards, the language and the people in Denmark may therefore give rise to the expectation that the southerners are also better at understanding Danish. However, as became clear from Table 3 the northerners translated just as many Danish words correctly as the southerners. This gives rise to the expectation that there is no relationship between intelligibility and extra-linguistic factors in our investigation. We correlated the intelligibility scores with the attitude and contact scores as found in Table 3. The results show that there is no correlation between the mean intelligibility scores and the contact or attitude scores in the data.

## 4 CONCLUSIONS

Some previous studies have established a link between language attitudes, contact and language comprehension abilities (e.g. Delsing and Lundin-Åkesson 2005). In the current study no link



has been established between the intelligibility scores from 25 informants and the attitudes as expressed by the same informants. Nor has a correlation been found between intelligibility scores and the informants' history of contact with the language in question. Informants in Northern Norway have very different contact patterns with the Danish language and people from informants in Southern Norway. These different contact patterns do not correlate significantly with different comprehension scores obtained in the two locations, however. The contact scores calculated in this study are based on day to day contact with the neighbouring language, but also on the frequency of visits to the neighbouring country. This contact was reported as relatively infrequent by both groups of informants, after all 3-5 visits to a country during a lifetime do not constitute frequent contact. However, the reading and listening frequencies that informants reported were rather high, and no meaningful relationship can be found between these scores and comprehension either. The link between dispersed contact frequency on the one hand and comprehension scores on the other therefore seems contestable. Probably, more frequent or intensive contact is necessary to result in improved intelligibility. Future studies should consider the role of much more frequent contact on comprehension. Informants who work in the neighbouring countries for a longer period of time every year or people who go regularly for meetings could be interviewed in more detail for this type of study. If these informants score radically better in comprehension tests than informants who work elsewhere for longer periods of time or commute to elsewhere, one could argue a link between contact and comprehension more successfully. As of now, however, no indication of a relationship between the two variables has been found.

There is, however, a significant relationship between language attitudes and language contact patterns in the current data set. It appears that Norwegian pupils who have had more contact with the Danish language are also substantially more positive towards the variety. The two populations in this study live at opposite sides of Norway and the northernmost informants are very restricted in their possibilities of visiting Denmark. Our results give an indication that this geographical difference is meaningful for attitudes towards the neighbouring country and its language. The dynamics of this relationship must be explored further in the future, however. It is unclear from our data set whether Southern informants hear and read Danish more than the northern informants because they are more positive towards the language, or whether they are more positive towards the language because they have been exposed to it on a more regular basis. Future research must also focus more in depth on the whole contact and attitude profiles of the informants. The pupils in the current study differ in their attitudes towards Danish only, while they have comparable attitudes towards the Swedish language and people. This result shows that the negative attitudes towards Danish cannot be explained by a general negative attitude among the northerners.

Finally, this current study has also shown that language attitudes are not good predictors of comprehension. This is a finding that somewhat contradicts previous results obtained by other researchers (e.g. Delsing and Lundin-Åkesson, 2005). It could be that the overt attitudes elicited in the current study are not particularly good predictors of linguistic behaviour, while more subconscious attitudes could help us explore the link between extra-linguistic factors and comprehension more in depth. Future research should focus on obtaining informants'

subconscious attitudes towards neighbouring languages and cultures and explore a potential link between them and comprehension scores.

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