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# The influence of non-native morphosyntax on the intelligibility of a closely related language

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**Abstract**

This study investigates the effect of morphosyntactic differences on our ability to comprehend a closely related language. Previous studies of mutual intelligibility, or receptive bilingualism, have focussed largely on the role of extra-linguistic, lexical, or phonetic factors. Although there is reason to believe that differences in morphology and syntax might worsen the ability to comprehend a closely related linguistic variety, this claim is previously untested. This article reports an experimental investigation of whether Danes' comprehension of the closely related language Norwegian is impeded by certain Norwegian grammatical constructions. We tested sentence comprehension experimentally in four different conditions to assess the relative effect of non-native morphosyntactic features as opposed to non-native phonology on intelligibility. Correctness rates of the responses and reaction times were measured. Results indicate that word-order differences cause larger problems for listeners than morphological differences. However, the non-native phonology featured in the experiment impedes comprehension to a larger degree than the morphosyntactic differences do. Our results have implications for work in natural language processing as well as for studies in speech comprehension, particularly those applied to situations of language learning and teaching in areas where receptive bilingualism is widespread.


*Keywords:* Mutual intelligibility; Syntactic parsing; Non-native morphology; Non-native syntax; Scandinavian languages; Receptive bilingualism

## 1. Introduction

This article discusses the role that variation in morphology and syntax might play for the comprehension of a closely related language. The claim that differences in morphosyntax influence intelligibility is investigated with a listening experiment testing Danish subjects' comprehension of Norwegian. To demonstrate how the results from this investigation could be applicable to other situations of receptive bilingualism, or semibilingualism, outside the Nordic countries we first describe the state of affairs with respect to mutual intelligibility between speakers living in that region. We then review previous work concerned with morphosyntactic variation and intelligibility, before turning to the methodology, results and a discussion of our own investigation.

### *1.1. Mutual intelligibility in the Nordic countries*

The countries in the Nordic area, under which is understood the Scandinavian countries Norway, Sweden, Denmark, in addition to Finland, Iceland and dependent areas Faroe Islands, Greenland and Åland, share a large proportion of political and cultural norms, due to a history of mutual rulers, governments and population movements across national boundaries

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within the region. The Nordic Council and Nordic Council of Ministers put emphasis on the use of Nordic languages, rather than English, for communicative purposes within the region. Language policies put forward ensure, among other things, that inhabitants of the Nordic area can communicate with other authorities than their own in their native national majority language (The Nordic Council, 1981). This is made possible especially because of the linguistic similarities that exist between the three national varieties spoken in Scandinavia that are also used in parts of Finland (Finno-Swedish), in Iceland (where Danish is taught as a foreign language in schools) and in the Faroe Islands (where Danish is an official language).

Intelligibility levels between speakers of Norwegian, Swedish and Danish are far from perfect but the situation in Scandinavia is still referred to in literature as one of 'receptive bilingualism' (Braunmüller and Zeevaert, 2001) (The term 'semi-communication' (Haugen, 1966) is also used). The situation differs from places where inter-dialectal communication occurs as speakers do not have one standardised variety to refer to in cases of miscommunication. Compared to multilingual communities where speakers retain use of their native language while speaking to interlocutors who speak another language, such as the receptive multilingualism described for instance in Campbell and Grondona (2010), the Scandinavian situation stands out due to the relatively low frequency of contact that occurs between speakers; the Scandinavian languages are largely confined to each their own nation state.

The mutual intelligibility between Norwegian, Swedish and Danish has been subject to a number of investigations since the second half of the last century. Haugen (1966) investigated self-reported intelligibility in a seminal study. His findings indicated that Norwegian was the other variety most easily understood both by Swedes and Danes. Reported intelligibility levels between Swedes and Danes were fairly low: 40% of Danes and 44% of Swedes reported to understand the other language well as opposed to 72% and 61% who reported to understand Norwegian well. Although Haugen (1966) was an investigation of self-reported intelligibility, his findings were replicated in later empirically based studies. Maurud (1976), for example, investigated comprehension of other Scandinavian languages among 506 military recruits from Sweden, Denmark and Norway. He found that Swedes and Danes struggle with the comprehension of other Scandinavian's spoken varieties; while Norwegian informants had the overall highest comprehension scores (Maurud, 1976). In the most recent studies of mutual intelligibility within Scandinavia, mutual intelligibility *patterns* remain the same. A large-scale investigation of intelligibility rates of spoken and written language in the Nordic countries conducted in 2003 and 2004 (Delsing and Åkesson, 2005) reports that teenagers in Sweden and Denmark decipher less than their peers in neighbouring countries when listening to the other Scandinavian languages. Delsing and Åkesson (2005) compare their data to the scores reported in Maurud (1976) and show that comprehension scores of neighbouring languages have declined in all Scandinavian speaker groups.

The proposed explanations for this decline in intelligibility scores have been *extra-linguistic* as well as linguistic. Delsing and Åkesson (2005) report a statistically significant correlation between intelligibility levels and language attitudes. However, van Bezooijen and Gooskens (2007) point out that a causal relationship between attitudes and intelligibility rates is hard to establish, as these factors could influence each other (for an in-depth investigation of attitude development and mutual intelligibility, see Schüppert et al., in press).

### *1.2. The relationship between linguistic differences and intelligibility*

The possible *linguistic* explanations for intelligibility problems between speakers of closely related languages are plentiful. It goes without saying that the amount of unfamiliar lexis encountered when listening to a different linguistic variety will have an effect on the intelligibility of the said variety. No quantification of lexical differences between Danish and Norwegian exist as far as the authors know, but previous research of mutual intelligibility indicates that lexical differences speakers encounter in communication situations are miniscule; Gooskens (2007) reports 0–1.2% non-cognates (of all words) between Norwegian and Danish written texts. The factor of lexical variability is therefore unlikely to contribute much to communication problems between Norwegians and Danes.

A number of empirically based investigations in the past have established that phonetic distances play a role for intelligibility. The more phoneme correspondences two varieties have, the higher the degree of mutual intelligibility is (Gooskens, 2007; Kürschner et al., 2008 for Scandinavian languages and van Bezooijen and Gooskens, 2007 for West Germanic languages Dutch, Frisian and Afrikaans). The comprehension rates of *spoken* varieties across the national borders in Scandinavia are lower than those of written language (Delsing and Åkesson, 2005). This observation indicates that there might be rather substantial differences found in the phonology and phonetic realisations of the languages in question, and this is indeed the case. Phoneme inventories in Norwegian and Danish differ quite substantially. As illustrated in Table 1 Norwegian has 9 distinctive long vowels while the Danish phoneme inventory consists of 13 distinctive long vowels. Also (East) Norwegian has a considerably larger number of consonant phonemes than Danish due to the retroflex sounds found in the inventory.