Chapter 9
Conclusions and next steps

9.1 Summary

This book has provided an overview of research on mutual intelligibility between closely related language varieties. It has discussed various methods for quantifying intelligibility as well as linguistic and extra-linguistic determinants of intelligibility. From this overview, it became clear that the choice of method for measuring the level of intelligibility depends on the purpose of the investigation and many practical factors. At the same time, the overview has shown that many different linguistic and extra-linguistic factors determine how well speakers of one language understand another related language and that all these factors often intercorrelate.

As far as extra-linguistic factors are concerned, the amount of exposure is a very important determinant of intelligibility. Several investigations found high correlations between intelligibility scores and the amount of exposure to the target language. Consequently, an important recommendation to language teachers, language policy makers and language users who want to improve receptive language skills is to create situations where the language learners are exposed to the target language. These situations can be created through personal contacts, school exchange programs, or the media. The studies discussed in this book regarding the relationship between exposure and intelligibility also underscore the importance of exposure for strengthening the position of lesser-used languages. Increased exposure to a language enhances comprehension, thereby expanding opportunities for speakers of smaller languages to use their native tongue across a wider range of contexts. However, it should be noted that it is difficult to establish cause and effect, and it may sometimes be a vicious cycle. Typically, people have limited exposure to minor languages, leading to poorer comprehension. Consequently, difficulties in understanding can discourage further contact with the language, perpetuating the cycle.

Lexical differences between listener language and target language are the most important linguistic determinant of inherent intelligibility. If listeners recognize too few words in a text or message, there is no way they will be able to understand the message (van Heuven 2008). As long as the listeners recognize the words in a message, the word order is less important. This line of reasoning is confirmed by the high correlations that have been found between inherent intelligibility scores and lexical distances in various investigations. Lexical distances explain most variance in the model based on measurements from the MICReLa project involving Germanic, Romance and Slavic language families. Receptive multilingual-

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ism is, therefore, most likely to be successful if the listeners recognize a large proportion of the words. This means that receptive multilingualism can be improved if interactants learn non-cognates they do not recognize from their own language. However, even if words are cognates, there is no guarantee that the listeners will recognize them since the pronunciation of target words may be too different from the corresponding words in the language of the listeners. The importance of pronunciation differences in predicting and explaining intelligibility became clear from the research that was presented in Chapter 5, where high correlations were found between intelligibility measures and phonetic distances. Therefore, intelligibility and receptive multilingualism will improve if listeners become aware of sound correspondences between cognates in the target language and their own language. Listeners can become aware of such correspondences by being exposed to the language and by formal teaching programs that focus on the most frequent and regular correspondences between cognates in their own language and the language of the speaker.

By looking at the relationship between intelligibility scores and their determinants we gain a better understanding of the mechanisms behind the intelligibility of a closely related language. As shown in the simple statistical models presented in Chapter 7, the level of intelligibility can, to a large extent, be predicted and explained by a limited number of linguistic and extra-linguistic factors. However, the correlations and the models of intelligibility still leave room for improvement and, as it became clear from the discussions of linguistic and extra-linguistic determinants of intelligibility, there are many factors that play a role in determining intelligibility. Continued research will advance our understanding of the processes involved in understanding a closely related language. The following sections will identify suggestions for future research and gaps in our knowledge.

9.2 Improving measurements of intelligibility

Many different methods for measuring the level of intelligibility of closely related languages have been used for various purposes. Some of these methods have been developed within other disciplines, such as speech technology, second language acquisition, and speech pathology. New technical advancements are contributing to ongoing developments in all these areas. It is important to keep an eye on such developments, as these may also contribute to research in the area of mutual intelligibility of closely related languages. Some of these new techniques may be easier to use, while providing us with more detailed and refined measurements. They may also solve some of the disadvantages and weaknesses of traditional methods, as discussed in Chapter 2.

It is important to note that different methods may lead to different results. For example, the percentage of correct translations cannot be compared directly to the percentage of correct answers to open questions about a text. Even if the same method is used, the results may not be comparable if variables such as test material, background of the listeners, and quality of recordings are different (see Section 2.1). Therefore, using different methods for each new investigation makes it difficult to put results into perspective by comparing them to the results of other investigations. For example, Delsing (2007) compared the results of an investigation of inter-Scandinavian intelligibility (see Example 2.13) to results from a previous investigation by Maurud (1976) and concluded that comprehension of neighboring languages seems to have deteriorated during the past 30 years. However, this conclusion should be drawn cautiously since the methods and materials used in the two investigations are different.

Therefore, it would significantly advance research on mutual intelligibility between closely related languages if one uniform method for measuring intelligibility were developed, preferably with user-friendly software where speech material from new languages can easily be added. A step in this direction was taken in the MICReLa project. The word recognition task from the MICReLa project was later used with translations of the same words to investigate the mutual intelligibility between Finnish and Estonian (Härmävaara and Gooskens 2019, see Section 6.2.2). Finnish listeners could recognize 61.3% of the Estonian words, and the Estonian listeners could recognize 44.6% of the Finnish words. In isolation, the intelligibility results from the Finnish-Estonian investigation were not very informative about the level of mutual intelligibility between the two languages. However, by comparing these results to the results for 70 European language combinations with participants who had the same background as far as age and education are concerned, the results could be put into perspective. The comparison to the MICReLa results showed that Estonian participants understand Finnish rather well in comparison to Europeans from the Germanic, Romance, and Slavic language families. Only 21% of the results involving the 70 MICReLa language combinations were higher than the Estonian listeners' results. However, the results of the Finnish listeners were rather low compared to the MICReLa results. Here, 59% of the MICReLa listeners performed better when listening to a closely related language. The intelligibility results of the Estonian listeners were closest to the results of Slovak participants tested in Polish. The results of the Finnish listeners were most similar to those of Romanian participants tested in Italian.

The word recognition task used for the MICReLa project could relatively easily be used for the Finnish-Estonian project. However, to develop a uniform intelligibility test that can be used cross-culturally and with different kinds of listener groups is not straightforward, as becomes clear from the considerations

in Chapter 2. For example, some listeners may be illiterate, some texts may not be suitable for all listeners, or words that are frequent in one language may be less frequent in another. A uniform method for collecting data from many different languages and dialects from worldwide would be a powerful tool for researchers and language policymakers.

Most of the methods discussed in Chapter 2 measure intelligibility in one direction, e.g., the intelligibility of language A among speakers of language B. In addition, knowledge about mutual intelligibility has primarily been collected from controlled laboratory conditions and tasks. Such measurements are generally low in ecological validity. Much of our experience with closely related languages comes from real-life communicative situations. Further research in more realistic situations using conversational tasks may advance our understanding of cognitive processes during receptive multilingualism. During a conversation in the receptive multilingualism mode, listeners speak one language while listening to another, which takes considerable effort. Little is known about the cognitive processes involved in this kind of language switching (Declerck and Phillipp 2015). Some languages have a stronger representation in the mental lexicon than others, and several languages can be activated in parallel (see, e.g., Szubko-Sitarek 2011). They influence each other during language processing, and this is especially relevant in the context of receptive multilingualism. Psychological experiments using techniques to measure processing effort, such as eye tracking and EEG measurements, may add significantly to our understanding of processes involved in receptive multilingualism.

Often, researchers are primarily interested in determining inherent intelligibility, see Section 4.7. However, in reality, inherent intelligibility is almost a theoretical construct since most listeners have been exposed to the language of the speaker or some related language to some extent. In addition, as the overview of methods for measuring intelligibility by means of functional tests in Chapter 2 made clear, it is not a straightforward task to quantify the level of intelligibility between two languages. Preparing and administering experiments and the wide varieties of tests, test material, and test situations is often labor-intensive. Also, the variation in the personal backgrounds of listeners involved in intelligibility research makes it hard to compare levels of intelligibility between different language pairs. Problems related to functional testing may be circumvented by measuring objective linguistic distances that have been shown to correlate with intelligibility scores. New technologies within speech recognition based on deep neural networking techniques may prompt new objective approaches to measuring inherent intelligibility. For example, it would be interesting to test whether Swedish and Danish speech recognition systems would understand the neighboring languages equally well or whether there would be the same asymmetric in-

telligibility as repeatedly found in previous research, with Swedes having more difficulties understanding Danish than vice versa. If an asymmetry is found in automatic speech recognition, this may confirm the evidence that asymmetric inherent intelligibility has a linguistic basis.

9.3 Improving measurements of determinants to better reflect intelligibility

In this book, we have focused on measurements of determinants that have been shown to correlate with intelligibility. As mentioned above, the extra-linguistic factor that predicts general intelligibility best is exposure. However, as became clear from Chapter 4, many extra-linguistic factors play a role and some interact with each other and with linguistic factors. Advanced methods have recently been developed to measure some of these extra-linguistic factors in more refined ways within psycholinguistics. For example, advances have been made to elicit implicit attitudes that are difficult to capture with traditional methods. Attitudes have mostly been found to show rather low correlations with intelligibility, even though intuition expects attitudes to be important for the level of intelligibility. Positive attitudes may motivate the listeners to make an effort to understand the speaker, and negative attitudes may have the opposite effect. Future research is likely to find measures of attitudes that better reflect the kind of attitudes that matter for intelligibility.

Even if great care is taken to select a homogenous group of listeners for an intelligibility experiment, there may still be large differences between the performances of individual listeners. In Section 4.5, some individual characteristics were mentioned that may determine how well listeners can understand a closely related language. More research along these lines with input from psychology is likely to improve our understanding of the processing of such languages. The correlational analyses presented throughout the book mostly focused on predicting and explaining the mutual intelligibility of whole languages. However, to gain a greater understanding of processes involved in understanding a closely related language, it is necessary to correlate measurements at the level of the listener rather than working with the means across language combinations. It may be necessary to use more advanced statistical analyses, such as mixed modeling, to analyze such data sets.

As far as the linguistic determinants of intelligibility are concerned, many of the measurements introduced in this book were initially developed for measuring distances between dialects to characterize dialect areas and draw dialect maps. In Chapter 5, research was presented that has used such measurements to predict

and explain the level of mutual intelligibility between languages and dialects. Especially lexical distances and phonetic distance measurements have been successful determinants of inherent intelligibility measures. Measurements of syntactic and morphological distances have received less attention from dialectometrists and the correlations with intelligibility are lower. There may be room for improvement of measurements at these linguistic levels, making them suitable to better predict and explain intelligibility.

Even when combining measurements at different linguistic levels in a statistical model of inherent intelligibility, there is still a large amount of unexplained variance. This means that there is room for improvement of communicatively relevant linguistic distance measures. In Sections 5.1.1 and 5.2.1, a number of improvements were discussed that may better reflect communicatively relevant linguistic distances.

It remains to be investigated how such improvements can be incorporated into distance measurements. For example, it seems important to gain more knowledge of listeners intuitions about correspondences between sounds in the target language and their own native language. Based on such intuitions, communicatively relevant weights can be added to algorithms that measure phonetic distance, such as the Levenshtein algorithm. Intuitions may be universal to some extent, but they are also likely to depend on the native language of the listeners. To advance our knowledge of the processes in the mind of the listener, when listening to a closely related language, it may, therefore, be advisable to first focus on a particular language combination before pursuing the goal of developing a universal measure of communicatively relevant linguistic distances.

To be better able to pinpoint individual features of a language that can predict the intelligibility of closely related languages, knowledge about word recognition and language processing from work by psycholinguists should be implemented. An experimental approach may advance our understanding of the weights that should be given to various linguistic differences between target language and listener language. For example, it is still unclear how disturbing differences in word order are for the listener. Experiments could be developed that systematically change the word order in sentences while keeping all other linguistic levels constant. By comparing the intelligibility of manipulated sentences to sentences with native word order, we can draw conclusions about the importance of word order for mutual intelligibility in particular language combinations. Similarly, we may gain more knowledge about the weighing of various other characteristics by experimental testing within linguistic level.

There may be a point beyond which the model cannot be further enhanced. It may be unrealistic to implement all relevant linguistic differences between the target language and listener language into a model of mutual intelligibility. Vari-

ous factors interact, and the combination of factors plays a role. In addition, certain factors may only apply to a restricted set of words. As a result, listeners might need to employ different strategies for each word to find its equivalent in their own language.

9.4 Conclusions

To conclude, the research discussed in this book has shown that we have come a long way in developing methods for research on mutual intelligibility between closely related languages. In particular, interdisciplinary research with insights from different disciplines has been fruitful. At the same time, new techniques and technology have advanced intelligibility research, allowing us to gain more knowledge about the limits and possibilities for mutual understanding between languages worldwide.

As discussed in Chapter 8, the results of intelligibility investigations have served various theoretical and practical purposes in the past. Future investigations will likely provide important input for further advancements and developments in various areas within and outside of linguistics. If we collect sufficient intelligibility data, we may come closer to the point where we can define a threshold below which there is an intelligibility breakdown. Such a threshold would make it easier to define when a language variety should be considered a language and when a dialect from a linguistic perspective. This is an important question for people fighting for language rights and to protect minority languages and lesser-used languages.