The Intelligibility of Norwegian-accented English

Which phonetic features of Norwegian-accented English hinder communication in situations where English is used as a lingua franca?

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Abstract

This study is an investigation of which phonetic aspects of Norwegian-accented English that might hinder communication in a situation where English is used as a lingua franca.

The study is based on investigating the concept of intelligibility as a construct of how much is actually understood by the listener. This is tested through having 10 different respondents listening to recordings of 4 different speakers. Three of the speakers spoke with varying levels of Norwegian-accented English and the last speaker was a native speaker from York. The respondents were both asked to transcribe a series of semantically unpredictable phrases and fill in gaps in a longer text designed to challenge the speakers. The phonemes that were tested were chosen based on a contrastive analysis of English and Norwegian. Minimal pairs from the same word class containing the phonemes that were perceived as likely to be mixed up by a Norwegian speaking English were then put into the same sentences. This resulted in 15 minimal pairs distributed over 30 sentences. The phonemes that are tested together in minimal pairs are the following vowels: /æ, ʌ/; RP: /eə, ɜə/ or GA /e, ɜ/; RP: /ɒ, ʌ/ or GA: /ʌ, ɑ:/ or /ɔ:, ɜ:/, and the following consonants: /v, w/, /f, θ/, /d, ð/, /s, z/, /ʃ,ʒ/, /tʃ, dʒ/. The results of the study were analysed by quantifying the discrepancies between what was actually said in the recordings and what the respondents transcribed. This resulted in each phrase and each speaker being given an intelligibility score.

The results of the study showed that the perceived level of segmental mistakes made by the speaker was a good indicator of their total intelligibility score. The study also showed indications that there might be discrepancies between the perceived comprehensibility of a speaker and the intelligibility of them. The contrasts that proved to hinder intelligibility most for Norwegian-accented English were shown to be RP: /ɒ, ʌ/ (GA: /ʌ, ɑ:/ or /ɔ:, ɜ:/) and /s, z/. This is mostly because the speakers did not make a contrast between these pairings substituting one phoneme for both. The study also discovered that use of a denti-alveolar /dʃ/ in place of a dental fricative /ð/ might make easily confused with the dental fricative /ð/.

These findings have implications for pronunciation teaching in Norwegian schools. They demonstrate that Norwegian learners of English still make pronunciation mistakes that hinder intelligibility despite wide exposure to spoken English in their day-to-day life. This means that pronunciation teaching should start earlier and should be made more explicit. It also demonstrates that the English curriculum in Norwegian schools need a more explicitly stated ideal than what is currently in existence.
Preface

I have always said that I suffer from an incurable case of procrastination syndrome. Through six years of university, it is almost impressive that I failed to ever get better at organising my work and starting on time. Admittedly, this approach to studying has mostly worked out for me, that is, most of my grades from my university courses have been good, but this approach always comes with so much self-hatred. Even now, I sit with the certain knowledge that my thesis could have been so much better if I only started in time to add the thousand things my perfectionist brain can think to improve on my thesis. This is also the great irony of the situation. Mostly this procrastination stems from a deep-set and often crippling anxiety of beginning because you know that the result will never be perfect. Because of this crippling anxiety, I will try my best to be happy with any result that this thesis might have, because the fact that I even finished it is reason for me to be proud of myself. Be sure, this process entailed the killing of many a personal demon.

I did, however, by no means fight this battle alone. Therefore, I would like to extend my eternal gratitude to all of the supporters I have out there. Firstly, my family deserves a thank you for always checking up on me and for doing their best to facilitate my success. My mother needs a special shout-out in this regard, as she knows me well enough to always keep nagging on me, while still remaining supportive when I inevitably report back that I have not made as much progress as I had hoped. I also have a very supportive group of friends that have had to deal with me going completely off-grid for the last two weeks and cancelling several plans for socialisation in favour of maybe getting something done on my thesis. Special shout-out here goes to Ida, as she, most of all, has had to deal with my cancelling of plans (I have cancelled three plans with her the last week alone) and ever-increasing anxiety levels.

I also need to extend my gratitude to those who provided recordings for my survey. I know especially one of you, but probably, to some extent, all of you, struggled with the notion of having your accent accessed by strangers, but you still sent me recordings. Concerning my survey, everyone that answered it also deserve a thank you. Last but not least, I need to thank my supervisor Gjertrud Flermoen Stenbrenden. You might not have gotten to do much supervision (due to my last-minute working style), but the input you have given me gave me a standard to strive towards. You also never discouraged me from trying to deliver on time, even though other supervisors might have – this was immensely appreciated!

This preface is already way too long, and way too personal, but apparently finishing a master’s thesis is emotional – who knew?

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1 Introduction

There is an increasing focus, both internationally and here in Norway, on teaching English as a *lingua franca*. As a consequence, you can, for example, find the following competence aim in the current Norwegian subject curriculum for English for year 10 students: “use the central patterns for pronunciation, intonation, word inflection and different types of sentences in communication” (Kunnskapsdepartementet 2013). Here the focus is on “central patterns for pronunciation, intonation, word inflection” (ibid.), rather than requiring the students to model themselves after the more traditional “native speaker ideal”. There are however several problems with this wording. Firstly, it is very unclear what is meant by “central patterns for pronunciation, intonation, word inflection” (ibid.), and secondly it provides no guide as to where to look for such patterns, as neither a native speaker ideal or otherwise is provided.

However, the message that seems to be somewhat implicit in the wording of this competence aim is that the pronunciation goal should not necessarily be to sound like a native speaker. This is a view that is shared by many researchers in the field of language learning and teaching English (Jenkins 2002; Cunningham 2008; Derwing & Munro 2009) and is usually accompanied by a view of English as a global language. What usually follows from rejecting the native speaker ideal is to move towards a focus on the learners achieving maximum intelligibility. The problem still remains, though, to define what maximum intelligibility even entails. In order to ascertain this, research into the nature of the intelligibility of spoken language needs to be conducted.

This thesis will therefore be an attempt at identifying which phonetic aspects, if any, of the Norwegian accent of English that can be a hindrance to communication in situations where English is used as a lingua franca. This is done in an attempt at gaining a better overview of what focus one should have when teaching and assessing spoken English as performed by Norwegians.

1.1 Definition of terms

When working in the field of language learning and teaching there is a plethora of terms that are in need of being defined. For this thesis the terms that are especially important to have clarified are the concepts of English as a second language (ESL), English as a foreign
language (EFL), English as a lingua franca (ELF) and English as an international language (EIL). In this study, ESL will be taken to mean any speaker that has English as a second language, whether this means that they grew up speaking it or they learned it in school and use it in their professional life. EFL will be defined as the view of English where one aims to achieve a native speaker (NS) standard on their pronunciation, and where the imagined future communication partners are native speakers. EIL and ELF are for the purposes of this thesis taken to mean the same, and therefore ELF has been chosen as the preferred term. ELF is in this thesis taken to entail a view of English as a global language where the native speaker ideal comes second to achieving best possible intelligibility, and where imagined communication partners are both non-native speakers (NNS) of English as well as native speakers. Lastly, lingua franca is taken to mean the language that is used to communicate when two or more speakers that do not share a first language communicate with each other.

Throughout the thesis, Derwing & Munro’s (2009) definitions of intelligibility, comprehensibility and accentedness will be used. That means that accentedness is defined as “how different a pattern of speech sounds compared to the local variety” (ibid. 478), comprehensibility is defined as “the listener’s perception of how easy or difficult it is to understand a given speech sample” (ibid.), and intelligibility is defined as “the degree of a listener’s actual comprehension of an utterance” (ibid. 479), that is: intelligibility is defined as being a measure of how much of an utterance is actually understood by the listener.

1.2 Aim and limitations of the thesis

Identifying all the phonetic aspects of Norwegian-accented English that might hinder communication in situations where English is used as a lingua franca would be an extensive and highly complex task. It might even be an impossible task, as people with different language backgrounds are likely to have different requirements of the English spoken in order to make it easily intelligible for them. As a consequence, this thesis will only be attempting to identify which phonetic mistakes Norwegians make when they speak English that might lead to misunderstandings or that might make them unnecessarily difficult to understand. The thesis is further limited to focusing on only segmental phonemic features of the language (Field 2005, 402), which means that only separate phonemes will be tested, not stress or intonation patterns. The phonemes that were tested were chosen by carrying out a contrastive analysis of the phoneme inventories of English and Norwegian, and then selecting the
phonemes that were perceived as most likely to cause misunderstandings from the phonemes that English and Norwegian does not have in common.

In other words, the results of this study will only be able to account for what “central patterns for pronunciation” (ibid.) and to some degree “word inflection” might mean, and not be an investigation into the intonation of Norwegian-accented English. As the study is also conducted on a rather small scale, it will not be able to give an exhaustive insight into the issue either.
2 Theoretical background

2.1 Previous studies on the Norwegian-accented English

Not much has been written about Norwegian-accented English, but the studies that have been conducted already have mostly been conducted from a socio-linguistic point of view, with a focus on attitudes towards Norwegian-accented English. There have also been studies conducted on how and why Norwegian students in secondary education chose their accent aims and how this affects their output and attitudes towards each other.

There are especially three previous master’s theses conducted on Norwegian-accented English that are relevant to this study. The first one is a thesis written by Christoffer Hordnes in 2013 on British native speaker’s attitudes towards the Norwegian-accented English. In this study he found that the closer the Norwegian speakers’ accent were to RP the higher their perceived level of education and general social prestige. Despite this, the speakers’ with a heavy Norwegian accent were not perceived to loose prestige by their accent. He also found that “there was little in the results that suggested that Norwegians were seen as more prestigious than people from other countries” (Hordnes 2013, 94).

Another master’s study that dealt with this subject was conducted by Rachel Dykeman in 2016 and investigated Norwegian and Canadian English teachers’ attitudes toward different ESL/EFL pedagogical models. She conducted several interviews with English teachers in Canada and in Norway and found that: “The Canadians found Norwegian accented English difficult to recognize, unproblematic in regard to comprehension, and phonetically appropriate as a pronunciation goal for English second language students.” (Dykeman 2016, 76). Despite this fact, she also found that the Norwegian teachers still feel that a native-like accent is more desirable than a Norwegian-sounding one. Her study also showed a link between the Norwegian teachers wish of mastering a native-like English accent and their confidence in their ability to teach English (ibid. 71-72). They explicitly expressed: “They believed native-like accents would create more confident students, and that removing NS [native speaker] models from language classrooms would pose major challenges in terms of grading or creating curriculum.” (ibid, 73). This belief, of course, assumes that removing the native speaker (NS) ideal means removing any sort of ideal. As of today, this is partly the
case, as “central patterns of pronunciation” (Kunnskapsdepartementet 2013) is not a clear pronunciation goal for teachers to aim towards. Hopefully, this thesis will be a step on the way to clarifying this ideal.

The third master’s thesis written on the subject of Norwegian-accented English was written by Ola Haukland (2016) and dealt with “Attitudes to Norwegian-accented English among Norwegian and non-Norwegian listeners”. Unlike Hordnes’ study, Haukland’s study involved non-native speakers’ (NNS) attitudes towards Norwegian-accented English, as well as NS attitudes, and Norwegians’ own attitudes. He states his main findings as being: “Norwegian listeners have more negative attitudes than non-Norwegians towards Norwegian accentedness” (Haukland 2016, 51) further: “Norwegian listeners also rate Norwegian influence on English accent as stronger than do non-Norwegian listeners” (ibid). Haukland also included some questions about the perceived intelligibility of Norwegian-accented English in his survey, as well as following up these questions with in-depth interviews with some of the respondents. His conclusion based on these interviews was that

“intelligibility of pronunciation is not something that is likely to become a problem for the average learner/user of English (…) Only in a few specific cases can it lead to breakdowns in communication or misunderstandings, both of which seem more likely to occur in interactions with native speakers of English than with proficient non-native speakers.” (ibid, 71).

Based on these findings, the results of this thesis should show that there are none, or at least very few, aspects of Norwegian-accented English that are likely to interfere with intelligibility. It should, however, be noted that Haukland’s study actually tests 
comprehension more than it does intelligibility, at least according to the definitions operated with in this thesis.

Ulrike Rindal has also conducted a couple of studies on Norwegian-accented English that are relevant for the subject of this thesis. Firstly, there is her study from 2010 on which accent Norwegian secondary students choose as their model when speaking English, why they have chosen the model that they have, and how this potentially affects their output in English. Rindal found in her study that the two most natural choices of accent among the surveyed students were British English and American English (Rindal 2010, 253), and that British English still enjoys a slightly higher status than American English among Norwegian
students. The study also showed that the students asked attached different values and associations to the different accents of English, and that these evaluations were also extended to their peers and their chosen accent (ibid, 255). Lastly, this study found that despite the fact that the majority of the students being asked explicitly aimed for a British English accent, their phonetic realisations of the word list used in the study were more often American English than British English (ibid. 253). In a study that is in many ways an extension of Rindal’s study from 2010, Rindal and Piercy (2013) found that some of the students surveyed on the same subject actually chose to aim for a “neutral accent”, which they best described as an accent that did not aim to sound like any specific native speaker accent (Rindal et al. 2013, 221). One student interviewed described this accent as: “You pronounce it based on how it sounds in your head, like, naturally, not that you, like, change it to sound more British or more American. It’s actually just reading and talking the way that feels natural to you.” (ibid). This finding actually to some degree contradicts the concern expressed by the Norwegian English teachers surveyed in Dykeman’s study who felt that creating students with native-like accents would make these students more confident. This might point to a generational difference between the teachers and the students, where the teachers still view English as a foreign language, whereas the students seem to have a more second language view of it. As these students in many ways seem to view English as a second language, as opposed to a foreign language, it seems they also feel that an English with standard grammar spoken with a more Norwegian phonetic system is more representative of their relationship and identity when speaking English.

Based on the findings in previous studies on Norwegian-accented English, the results of this study should be that there are few, if any, aspects of Norwegian-accented English that should be a hinder for intelligibility. The results should also show that native-speaker respondents should struggle slightly more than non-native respondents when trying to understand the output given by the speakers in the survey which this study is based on.

### 2.2 Phonetic aspects of Norwegian-accented English

The most widely taught standard accents of English: Received Pronunciation (RP) and General American (GA), have 16 consonants in common with Norwegian. This means that there are 8 consonants that exists in RP and GA, that do not exist in Norwegian. Among these
one can find: all the voiced fricatives used in English, both the affricates, both the dental fricatives and the approximant /w/. This means that, per contrastive analysis, these should also be the consonants that are most likely to cause intelligibility problems for Norwegians when speaking English.

Norwegian has no voiced fricatives, which means that these are often completely unfamiliar to Norwegians and therefore also difficult for them to pronounce. This usually has a couple of different outcomes in terms of likely mistakes that occur from this fact. In the case of the contrast between sibilant pairs /s, z/ and /ʃ, ʒ/, Norwegians are most likely to simply substitute the lenis (voiced) sibilant with the corresponding fortis (unvoiced) sibilant (Nilsen et al. 1999, 46-49). In fact, a study conducted by Rugesæter (2012) actually shows that almost none of the Norwegian students tested in his panel made the contrast between /s/ and /z/ when speaking English, which is also in line with previous and older studies on the topic (124). This tendency transfers to the affricates in that /dʒ/ often will become /dʃ/.

In terms of the dental fricatives and the approximant /w/ the situation is slightly more complicated. As the dental fricatives do not exist in any form in Norwegian, they are usually substituted with the Norwegian sound that is perceived as being the most similar by the learner (Nilsen et al. 1999, 43). The phoneme /θ/ is usually substituted by either /t/, which has in common with /θ/ that they are both fortis and dental (ibid.), or by /f/, which has in common with /θ/ that they are both fortis fricatives. The first substitution is most likely also reinforced by the fact that the spelling of /θ/ is most often <th>, which is pronounced as /t/ in Norwegian. The phoneme /ð/ is usually only ever substituted by /d/, which has in common with /ð/ that they are both lenis and dental (ibid.) What is important to note, however, is that almost all Norwegians will still make a contrast between the two sounds, even though they might not pronounce any of them correctly.

With the approximant /w/ and the lenis fricative /v/ the problem is exactly the opposite, however. Because Norwegian does not have any of these phonemes, but rather a frictionless continuant that falls between the two in the form of /ʋ/ (ibid, 41), this contrast can potentially cause problems for Norwegians. This can either have the outcome that the Norwegian learner will use /ʋ/ for both /v/ and /w/, or they will use /w/ in place of both /v/ and /w/, which might make it difficult for a person unfamiliar with Norwegian to know which phoneme was intended (ibid.). Rugeseter’s (2012) study did, however, show that most of the Norwegian students tested did make a contrast between these two phonemes (124).
Because vowel quality varies so much between different accents of English, this issue is much more complicated to discuss in terms of Norwegian-accented English. However, there are some commonly used English vowels that Norwegians are likely to struggle with. Foremost of these is probably the vowel /ʌ/, which does have a similar Norwegian counterpart in the Norwegian /a/, but the spelling of /ʌ/ is so different from that of the Norwegian /a/ that this is likely what is causing problems for Norwegian learners (Nilsen et al. 1999, 78). Because the difficulty with this vowel is most likely connected with spelling, the substitution likely chosen by a Norwegian will often also be dictated by the spelling of the vowel. If the vowel is spelled <u> or <ou> the realisation will often be close to the Norwegian /ø/, and if it is spelles <o> or <oo> the realisation will be close to the Norwegian /ɔ/ (ibid.). This means that potential intelligibility problems stemming from mispronunciation of this word, will vary depending on which word the Norwegian learner is trying to pronounce. Another pair of vowels that are likely causing problems due to their spelling are the vowels /ʊ/ and /uː/. This is because both are usually spelled <u>, which they have in common with the Norwegian vowels /u/ and /uː/. In contrast with the English vowels, the Norwegian substitutions are front vowels that do not exist in English, which is also likely to make them sound strange to native ears (ibid. 82) In addition to this, Rugesæter’s (2012) study also showed signs that some students might also struggle with making the contrast between /e/ and /æ/ (124), which is a contrast that does actually exist in Norwegian, but that might be complicated by spelling.

Lastly, there are two vowels that may cause problems for Norwegians simply because they actually do not have any similar counterparts in the Norwegian vowel inventory. Firstly, there is the vowel /ɪ/, which is likely to be substituted by the Norwegian vowel /i/, which has a different tongue position than its English counterpart (Nilsen et al. 1999, 78). Secondly, there is the vowel /ɜː/ which is most often substituted by the Norwegian front-rounded vowel /ø/ (ibid.).

As for the diphthongs, Nilsen et al. (1999) posits that few of the diphthongs are likely to cause misunderstandings when Norwegian speakers use English, but notes that Norwegian front-closing diphthongs generally have a more front-closing quality than at least the RP diphthongs (89). Similarly, the back-closing diphthongs and centring diphthongs might result in slightly different realisations, as many of these lack Norwegian counterparts (ibid., 93-96). In other words, Norwegians might have slightly different realisations for many English diphthongs, but they are unlikely to sound so different they will be confused with other
diphthongs. The only exception to this might be the contrast between the diphthongs /ɪə/ and /eə/, as Rugesæter’s (2012) study showed that almost no students made any distinction between them when speaking (124).

2.3 Intelligibility of spoken English

When conducting a study on the intelligibility of an accent, it is also important to review which factors might affect this. Because this study focuses purely on phonetic aspects of the accent, the effect of different types of grammatical, syntactic and lexical errors, will not be discussed. There is however evidence that points towards a tentative correlation between learners who make few lexical and syntactic errors and learners who make “few segmental, phonetic errors, (...) use few communication strategies, (...) have few hesitation phenomena, and (...) have a good intonation.” (Albrechtsen et al. 1980). Another important fact to note when examining the intelligibility of spoken English is that intelligibility and accentedness are not necessarily connected (Derwing & Munro 2009, 478). This means that the level of perceived accentedness of a speaker, is not necessarily a good predictor of their level of intelligibility. Despite this, while strongly accented English can be perceived as easily intelligible, the opposite is never true (ibid.).

There is some uncertainty in the field concerning which aspect of spoken language is most important for intelligibility, with the debate often being reduced to whether “segmental features (phonemes)” or “suprasegmental [features] (word stress, rhythm, and intonation, often referred to collectively as prosody)” (Field 2005, 401-2) have the most pronounced effect on intelligibility. The majority of the researchers on the topic seem to lean towards the suprasegmental features having the most pronounced effect (Derwing & Munro 2009; Anderson-Hsieh et al. 1992 & 1998, ref in Field 2005, 402). Jenkins (2001, 16-17), however, can be said to disagree with this view to some degree as she posits pronunciation errors, rather than other types of transfer, to be the most important source of misunderstandings in oral communication. Despite this, few researchers would ever assert that the segmental features of an accent are completely irrelevant to the intelligibility of this accent either. This is also why it is still relevant to research segmental features and intelligibility.

Concerning the segmental features of speech, there has been some disagreement on whether consonants or vowels are more important for intelligibility. While Gooskens et al. (2008, 64)
find that consonants are generally assumed to carry more meaning and therefore be more important for intelligibility, Jin & Liu (2014, 594) posit that vowels play a more important role when it comes to learner English. Gooskens et al. (2008) do, however, follow up by clarifying that:

“The relative contribution of consonants and vowels to intelligibility may be different across languages since the size of consonant and vowel inventories can vary considerably and so can the number of vowels and consonants used in running speech.” (64)

Despite this, while different native accents of English have largely the same consonant inventory, their vowel inventory tends to vary a lot between them. Assuming that most native accents of English are largely mutually intelligible, this would point towards consonants carrying more information than vowels in English. This is also supported by Jenkins (2001, 17) who did not find vowel quality to be crucial for mutual intelligibility of learner English among NNS and therefore did not include it in her Lingua Franca Core. On the other hand, she did find almost all consonants except the dental fricatives to be crucial for intelligibility, which is also why she included these as parts of her Lingua Franca Core (ibid). Despite this, it should be noted that vowel length contrasts were still found to be part of the Lingua Franca Core (ibid.). This study might be able to shed some light on this issue, though it does test more consonant contrasts, six, than it does vowel contrasts, four.

One suprasegmental feature that has been shown to play an important part in the intelligibility of an accent is stress. Field (2005) posits that this might be because some research points towards the fact that the stressed syllable of a word is a part of how the listener retrieves this word from their inner lexicon (403-4). This impression is also backed by the fact that both Field’s (2005), Zielinski’s (2008) and Hanh’s (2004, ref. in Derwing & Munro 2009, 482) studies showed misplacement of stress to have a distinctly negative effect on intelligibility. Field’s (2005, 410) study further demonstrated that if the stress of a word shifted to the left it impaired the word’s intelligibility less than if the stress was shifted to the right. A fact that adds to the importance of stress in spoken intelligibility is Zielinski’s (2008, 81) finding that stress can actually affect the effect of segmental errors as well. That is, segmental errors that

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1 The Lingua Franca Core is the collection of aspects of spoken English that Jenkins, through widespread research, has determined is crucial to secure mutual intelligibility among non-native speakers of English using English as a lingua franca.
occurred in strong syllables had a more negative impact on intelligibility than those who occurred in weak syllables (ibid.). It is also worth mentioning that speaking tempo might also affect speech intelligibility, but that research in this area might actually point towards slow speech impairing rather than helping comprehensibility, the former being what one would perhaps expect (Munro & Derwing 1998, 2001, ref. in Munro & Derwing 2009, 483). Despite this, as Norwegian actually has a stress-pattern quite similar to that of English, it is unlikely to pose any major problems for Norwegian speakers of English. This is also why this study focuses on segmental features rather than suprasegmental features.

In the world of speech therapy, percentage of correctly spoken consonants (PCC), which is a measure of how many percent of a speaker’s consonants that are correctly realised, has proven to be a quite accurate predictor of a speaker with a speech impediment’s level of intelligibility (Lagerberg et al. 2014, 232). In a study of the intelligibility of learner language it mostly has potential as a possible predictor of a speaker’s intelligibility or as a means of classifying the severity of a speaker’s accent. Though a factor to take into account, is the fact that learner language is possibly more variable and therefore less consistent than the speech of a child with a speech impediment, which would also make PCC a less suited predictor of the intelligibility of learner language than that of a child with a speech impediment. This is also why PCC will not be used as a predictor of intelligibility in this test.

Another scientific field that has an interest in measuring the intelligibility of spoken language is that of linguistic research into the mutual intelligibility of similar languages. In this field, the linguistic distance between two languages can often be a good predictor of their level of mutual intelligibility (Gooskens et al. 2008, 63). An obvious difference between this field and the present study, is that in this study the intelligibility of Norwegian-accented learner English is measured, not the intelligibility of Norwegian to English speakers. It is, however, still interesting to note that the linguistic distance between Norwegian and English is quite small. In Chiswick & Miller’s (2005) paper they use the length of time “The US Department of State, School of Language Studies” uses to teach English speaking Americans different languages as a measure of linguistic distance between English and the language taught. According to this measure, Norwegian is actually one of only three other languages to achieve the top score on an index of how easy learning the language in question is for English-speakers (ibid. 5-6). Even though this might not be an absolute predictor of the intelligibility
of Norwegian-accented English, it can be an indicator that Norwegian-accented English should be fairly intelligible at least to NSs.

Another factor that might also affect the intelligibility of a speaker is actually the listener, or the speaker’s conversation partner, especially if both the speaker and the listener are NNSs. For example, several studies have been made on whether a listener’s experience with NNS English affect their comprehension of it. Both Gas & Varonis’ (1984, ref. in Derwing & Munro 2009, 486) and Kennedy & Trofimovich’s (2008) studies show that a listener with more experience with listening to NNS English will understand more of it. Kennedy & Trofimovich’s (2008, 471-2) study further showed, that while context plays little to no role in the intelligibility of English spoken by NSs, it can play a significant role in the intelligibility of English spoken by NNSs. Jenkins’ (2002, 89-90) study, however, shows that while context clues helps an NS, or bilingual NNS, listener while listening to an NNS, context will often not help an NNS listener while listening to a fellow NNS. Fox’s (2013) study also showed that the listener’s first language background might also affect how they process different kinds of learner mistakes and which mistakes affect their understanding the most. As all of the respondents in this study reported understanding most spoken English or more, these respondents can reasonably be counted as being close to bilingual. This also means that the results of this study should show that the added context of part two of the study should improve the intelligibility of the speakers tested.

Another factor that can affect the listener is their attitude towards the type of foreign accent they are hearing. One study has even shown that the fact that a listener can even hear a hint of a foreign accent might make them believe they understand less of what is being said (Rubin 1992, ref. in Derwing & Munro 2009, 487). There is however little evidence that a bad attitude towards Norwegian-accented English is likely to hinder intelligibility as neither Hordnes’ (2013), Haukland’s (2016) nor Dykeman’s (2016) studies were able to detect any negative attitudes toward Norwegian-accented English, unless they should be speaking in English with a fellow Norwegian. Dykeman’s (2016, 76) study even found that Canadian language teachers found Norwegian-accented English difficult to recognize as a non-native accent at all. This means that listener attitude should have no, or close to no, effect on the results of the present study.
3 Methodology

3.1 Measuring intelligibility

Measuring the intelligibility of speech is not a straightforward task and has been attempted in many different ways. There are also many different fields of science with an interest in testing this. Among these is the medical profession, which is interested in testing the extent of, for example, a speech impediment. Other fields interested in testing speech intelligibility are the linguistic field as well as the pedagogical field. An example of a medical study of the intelligibility of the speech of children with a speech impediment was conducted by Lagerberg and her colleagues in 2014. In this study they asked a group of respondents to transcribe the recorded speech of four different children, which would be a method of testing speech intelligibility, and which is transferable to testing of learner language as well (Lagerberg et al. 2014, 232).

An example of a method chosen for measuring the intelligibility of spoken learner English from the linguistic field can be found in Jin and Liu’s study from 2014. In this study they had learners record themselves saying each vowel and each consonant in American English in a so-called “null context” which is meant to limit interference with vowel- and consonant articulation. For vowels this means the context /hVd/, and for consonants it means the context /aCa/ (Jin & Liu 2014, 585). They then had respondents listen to the “words” and choose which they were hearing from a list that was provided with the recordings. In contrast with Lagerberg et al.’s method, this method tests the intelligibility of individual phonemes separate from a communicative situation like a conversation or a monologue. In that sense, this method is more suited to give a measure of speech accuracy rather than true communicative intelligibility. The reason this method might not be the best for testing intelligibility, is that when the words appear without any context whatsoever, there is no way to know if the intelligibility of what is being communicated has actually been lost. In other words, the information gap to be filled by the listener is very small, and therefore unsuited to properly measure intelligibility.

In her chapter on “Experimental Methods for Measuring Intelligibility of Closely Related Language Varieties” in the Oxford Handbook of Sociolinguistics (2013) Charlotte Gooskens outlines several methods of measuring the intelligibility of spoken language that can be
transferred to testing the intelligibility of spoken learner language. One suggested method of testing word-intelligibility would be to have listeners listen to a recording of a speech sample with an accompanying transcription with, for example, all the nouns missing. It would then be the listeners’ task to fill in the missing words. A limitation of this method is that the written context of the transcription might affect how the words are interpreted (Gooskens 2013, 12). Another similar method suggested by Gooskens is to present the words that one wants to test in the context of a so-called semantically unpredictable phrases (SUP), which are sentences designed to be syntactically correct, but that hold little meaning semantically. This eliminates the possibility for the listener to use context clues when interpreting the sentences, while still maintaining the opportunity to test the words in different phonetic contexts (ibid. 12-13). This method, in contrast with Jin & Liu’s (2014) method, provides a larger information gap to be filled, while still maintaining the opportunity to test separate phonemes.

Lastly, Gooskens also presents the possibility of using performance tasks in testing the intelligibility of spoken language, which is a method of testing intelligibility that has actually been employed on learner language already (ibid. 15). A performance task is designed to simulate a natural communicative situation as closely as possible. An example of such a task, would be to have a speaker give the listener different instructions and then see if the instructions are understood by having the listener try to follow them (ibid.). The advantage of such a method is that there is a true information gap to be filled by the listener, but it does not allow for very good testing of the intelligibility of different phonemes or specific words. Another limitation of this method is that it eliminates the possibility of conducting the study via an online survey, which would both make it difficult to conduct on a large scale and to find respondents for. Despite this, it is possible to use a slightly modified version of a performance task by having speakers describe something, and have listeners choose the picture that best describes what they heard.

### 3.2 Choice of method

The method that seemed best suited for this study was to first have a section with sentences that can to some degree be described as SUPs where minimal pairs of words from the same word class were placed in the same sentences in order to isolate specific phonemes and also to eliminate potential differences in interference from the phonetic and semantic environment. This first part of the survey is then followed by a second part where words containing the
same phonemes that are tested in part one, as well as a selection of words that are meant to be difficult for Norwegians to pronounce correctly in English, are placed in a long text, where the respondents are asked to fill in gaps in a text with the words they hear. This part is meant to control the intelligibility of the phonemes from part one in a more semantically logical and communicatively “natural” context. The second part of the survey is also accompanied by a questionnaire containing qualitative questions concerning the respondents perceived difficulty in understanding the different speakers in the survey.

The survey is also preceded by a short questionnaire. This questionnaire is meant to control for potentially confounding variables such as varying levels of competence in the English language among the respondents, different language backgrounds among the respondents, and also varying levels of previous contact with Norwegian-accented English. The questions from the biographical questionnaire, can be found in the appendix (Appendix A) at the end of the survey, while the questions from the second part of the survey are reviewed in section 4.3.2.

3.2.1 Limitations of the chosen method

The biggest advantage to this method is that it allows for easy distribution of the survey online and it allows for isolation of specific phonemes. It does, however, also have some significant limitations. The biggest of these limitations is that there is, as Gooskens (2013) also points out, no way to control for potential interference from the written context in which the respondents operate in the second part of the survey. There is also no way of controlling for the part played by the differing levels of lexical knowledge among the respondents (Field 2005, 402). That is, it can be hard to distinguish if a word is not recognised due to the listener not knowing it, or if it is not recognised due to a phonetic mistakes made by the speaker.

Another limitation to the survey is that it contains no natural conversations and therefore it does not truly test the actual intelligibility of Norwegian-accented English in a true communicative situation. An additional limitation that follows from this is the fact that there is no true information gap in the tasks that the respondents are asked to complete either. The respondents are not asked to confirm their understanding of a sentence or a word by actively doing something that they would only have been able to do based on the instructions or information given to them by someone speaking with Norwegian-accented English.
Lastly, there is a limitation that comes with both the fact that the survey is being completed online, and with the fact that the questionnaire is based on self-reporting. Since the survey is completed online, there is no way to control that the respondents only listen to the recording material once, as the survey asks of them, which would limit the degree to which the survey is able to mimic a natural communicative setting. There are also significant limitations connected with the fact that the respondents self-report their own skill level in English based on a pre-made scale. This variable would only be controlled for properly if the survey was preceded by standardized skill level tests. Having each respondent complete an extensive skill level test, in addition to the survey itself, is however extremely unrealistic for a project of such a limited scope as a master’s thesis.

Despite these limitations, the chosen method was perceived as being the most sensible. A master’s thesis is a project of quite a limited scope, and also a project that affords few resources to the researcher, both monetary and otherwise. In light of these limitations, some of the choices made by the researcher, unfortunately, has to be motivated by practicality over scientific soundness. There will also always be drawbacks to any choice of method. Language in general, maybe spoken language in particular, is an extremely complex construct to study and it is therefore also exceedingly difficult to study adequately.

3.3 Developing and distributing the survey

3.3.1 Survey material

The development of the source material for the recordings was twofold. It was partly based on identifying which phonemes that exist in English and not in Norwegian and then identifying which misunderstandings that are likely to occur as a result of this (see section 2.2). This information was then supplemented by the self-reported experiences of Norwegians using English as a *lingua franca* around the world in the following forum thread at the popular Norwegian forum Kvinneguiden (2013): “Feil nordmenn ofte gjør på engelsk” (Kvinneguiden, 2013) which translates into “Mistakes Norwegians often make in English”. This thread mentions both common grammatical mistakes, lexical mistakes, specific words that are hard to pronounce or that are easily confused with each other, and also common phonetic challenges faced by Norwegians trying to make themselves understood in English. In addition to this, I supplemented the material with my own experiences in both teaching and
learning English in Norway and by using English as a lingua franca as a Norwegian myself, and together with other Norwegians.

The development of the short phrases was for the most part based on the phonemes that exist in English and not in Norwegian, and the confusion that might follow from this. Minimal pairs from the same word class containing the phonemes that are likely to be mixed up by a Norwegian speaking English were then put into the same sentences. The number of minimal pairs was then limited to 15 to avoid listener fatigue among the respondents. The resulting 30 sentences were then presented to the listeners in a random order, so it would not be obvious which type of confusion that is tested in each phrase. The phonemes that are tested together in minimal pairs are the following vowels: /æ, a:/; RP: /æə, ə/ or GA /e, ə/; RP: /ɔ, ʌ/ or GA: /ʌ, a:/ or /ɔ, ə/. The following consonants: /v, w/; RP: /θ, θ/; /d, ð/; /s, z/; /ʃ, ʒ/; /tʃ, dʒ/. The development of the long text is based both on the desire to test the same phonemes from part one in a context more representative of a real communicative situation, and a desire to test different words that are generally known to be difficult for Norwegians to pronounce in English. The text is presented in the form of a story about a girl named “Joyce” and her struggles in organizing her birthday party. This story was created by trying to fit in as many of the words that are specifically mentioned as hard to pronounce in the aforementioned forum thread as well as some words added by the present writer. The words that were noted from the forum thread and then used in this text were: rare, weather, horror, mirror, birthday. The words: cash register, refrigerator, and literature, were also added based on the present writer’s own experience with the language. There are also attempts at creating challenges in pronunciation for the speakers in the text by adding many words containing potentially difficult phonemes in a row; an example of this can be found in the following sentence from the text: “Her mother’s family and her father’s family were not very good friends, and if she were to invite both World War Three would break out.”. In this sentence there is both frequent use of the phonemes /v, w/ in quick succession and the phoneme cluster /θr/ which can all be challenging for Norwegians. Both the original list of sentences and the whole text that was sent to the speakers, as well as an RP and GA transcription of them, can be found in the appendix (Appendix B & C) at the end of the thesis.
3.3.2 Choice of speakers

To find speakers that could provide recordings of the sentences and text the present writer recruited from their own network. The request for recordings was only sent to females in the age group 20-30 to try to make sure the voices in the recordings have a voice quality as similar as possible (Gooskens 2013, 199), and to ensure that gender bias does not affect the comparability of the results from the different recordings. There was, however, not put any limitations on level of education among the people that were asked to record. The use of a matched guise-test, as employed in many earlier studies on Norwegian-accented English, was avoided because it seemed most relevant to use natural accents of English instead of constructed and deliberately bad ones.

When a selection of approximately ten different recordings was available, three recordings that seemed representative of the range in level of accentedness in the recordings that were received were chosen. That is, one has a near native RP accent, one has a clearly detectable Norwegian accent, but still speaks clear English, and the third was perceived as having the most severe Norwegian accent. None of the speakers that sent recordings had the traditional severely Norwegian-accented English that is associated with figures like Petter Solberg and Thorbjørn Jagland, which might have been a traditional choice of most accented speaker for the survey. But, based on the fact that no one in ten recordings even came close to this level of accentedness, it does not seem realistic to expect a Norwegian that grew up in Norway in the last 30 years to have such a severe accent. This becomes especially true when considering the fact that English has become so prominent in Norwegian society. Despite this point, it is of course also possible that the speakers with the most severe accents of English were too ashamed to send recordings of themselves, as previous studies (Hordnes 2013; Haukland 2016) have shown Norwegians to be quite harsh critics of their own accents of English.

Lastly, a recording of a person who is a native English speaker from York, but with a quite unpronounced northern accent, was included in order to have the option of comparing the intelligibility of the Norwegian speakers against a native speaker with a non-standard accent. The speakers’ identities were then anonymised by giving them a number each. The speakers in this survey can be identified as follows:
### Table 3.1 Meta-data about the speakers

<table>
<thead>
<tr>
<th>Speaker</th>
<th>Mother tongue</th>
<th>Age</th>
</tr>
</thead>
<tbody>
<tr>
<td>Speaker 1</td>
<td>Norwegian</td>
<td>22</td>
</tr>
<tr>
<td>Speaker 2</td>
<td>Norwegian</td>
<td>24</td>
</tr>
<tr>
<td>Speaker 3</td>
<td>Norwegian</td>
<td>22</td>
</tr>
<tr>
<td>Speaker 4</td>
<td>English &amp; Norwegian</td>
<td>24</td>
</tr>
</tbody>
</table>

When the source material was sent out for recording, there were given no instructions on how the speakers were supposed to speak, or which accents they were supposed to aim for. This was a deliberate choice made in an attempt at getting the most natural examples of their accent of English as possible. As Rindal’s (2009) study showed, British English is still the marginally preferred accent among Norwegians, but despite this our realisations of different words are often more American. The recordings that were received mostly reflected this as well, with most of them having an RP quality, while still containing many American realisations of different phonemes. This is also why the source material is supplemented with transcriptions in both RP and GA. In addition to this, the recordings were edited slightly, both in order to cut out background noise in the recordings and to isolate each separate phrase so that they could be connected to separate questions in the survey.

### 3.3.3 Developing questions for the survey

Developing the survey turned out to be more challenging than expected as most host services for online surveys do not allow for separate recordings to be connected to separate questions. The choice of host for the survey eventually fell on SurveyGizmo as their service allowed for both inclusion of recordings in the survey and avoidance of having to post the recordings in a separate archive online. This had the added benefit of providing better protection of the privacy of the speakers in the recordings.

The survey was developed in such a way as to have the recordings appear with a text box underneath them where the respondents could write down what they heard in the recordings. In the first part of the survey all the recordings of the same speaker appeared on one page, with each speaker having one page each. Each respondent was only supposed to listen to 10 recordings from each speaker, which the survey hosting site picked out at random for each respondent. The major weakness of the survey host that was eventually chosen was that in order to get the correct text box to appear under the correct recording, all the recordings for
each speaker had to be visible for every respondent. Therefore, the survey was supplied with the following instruction: “Because of the limitations of the survey-service many recordings will appear when you answer this part, but you only need to listen to and record what you heard for the recordings with an answering textbox underneath them.”. They also had the following illustrative picture below (Figure 3.1):

![Illustration of layout for part 1 of the survey](image)

**Figure 3.1** Illustration of layout for part 1 of the survey

Ideally, only the recordings that each respondent was supposed to answer would appear every time, but it was difficult to find any survey host that allowed recordings to be connected to specific questions.

The second part of the survey, with the long texts, was set up in much the same way. The recordings of the long texts of the four speakers all appeared on one page, but only the ones the listeners were supposed to listen to had a text box underneath it:
The design of the questionnaire that was meant to provide meta-data about the respondents was without issues. This was much because this part did not require the inclusion of any recording. The supplementary questions that were added at the end of the survey were unproblematic as well, as these did not require any recordings to be included either.

### 3.3.4 Recruiting respondents

Respondents were recruited using the present writer’s own network of international friends, as well as the network of other friends with big international networks. Requests to join the survey were mostly sent via Facebook’s Messenger-application. The request to join the study also had the added incentive that all respondents could register to win a €20 gift card on Amazon.com, if they registered their email address in a separate form linked at the end of the survey. The form where they registered their email was kept separate from the survey in order to ensure the anonymity of the respondents. The original plan was to have only respondents of a non-Scandinavian background (except Finland, as the Finnish language is not related to Norwegian), and this instruction was also given together with the request to join the survey. Despite this, one Norwegian and one half-Norwegian, though the latter reported English as their first language and Norwegian as their second language, took and completed the survey. As their contributions were quite interesting to the study, their results were included and analysed.

Because of the design issues described in the last section there were also quite severe problems with recruiting respondents. These issues largely stemmed from the fact that the
survey did not work properly on smartphones, where many people experienced issues with the recordings not working. The survey was also somewhat difficult to understand if completed on a smartphone, since the recordings appeared on a separate site from the text box where the respondents were supposed to record what they heard. These issues naturally resulted in many respondents dropping out when they came to part one, which means that out of approximately 25 respondents only 10 completed the whole survey. For this reason, the results of this study might not be as representative as they could have been. The final overview of the respondents’ first languages is illustrated in figure 3.3 below:

![Figure 3.3 Overview of respondents’ first language](image)

### 3.4 Analysing the results

The quantitative analysis of the results will mostly be achieved by conducting an error analysis of what the respondents have written that they heard, compared with what the recordings in fact said. These results will then be quantified by giving each phrase an intelligibility score calculated according to the following formula:

\[
\text{Intelligibility score} = \frac{\text{Number of correctly recorded phrases}}{\text{Total number of phrases listened to}}
\]

*Figure 3.3 Formula for calculating intelligibility score*

This means that the highest intelligibility score achievable pr. phrase is 1. The intelligibility score for each phrase for each speaker will then be added together to give each speaker a total intelligibility score. As there were 30 phrases that were tested for each speaker, the maximum
intelligibility score for each speaker should have been 30 as well, but 4 phrases lacked data points for some of the speakers and were therefore taken out of the total score count. In light of this, the actual maximum intelligibility score becomes 26. As most of the respondents are not native speakers of English, however, it is highly unlikely that any speaker, no matter how perfectly they pronounce these phrases, should achieve the highest score.

The data from part 2 of the survey, is qualitative in nature and will therefore hopefully be able to give further insight into the quantitative data from part 1. The data from part 2 will also be possible to compare with the data from part 1, in order to determine to which degree the phonemes tested are equally intelligible in a long-text context.
4 Results

4.1 Phonetic analysis of the speakers

This sub-chapter is meant to give a brief overview of each speaker’s accent. In order to do this, each accent will be compared with the phonemic inventory of the standard accents RP and GA. Therefore, when the terms correct/incorrect are used, this is only in terms of the native speaker ideal that is these two standard accents. Based on the evaluations given below the speakers ranked from least accented to most accented becomes: Speaker 4, Speaker 3, Speaker 1 and Speaker 2. The reason Speaker 2 is evaluated as being more accented than Speaker 1 is that she is more inconsistent in her pronunciation and that she has slightly more inaccurate realisations of different vowels and consonants than Speaker 1.

4.1.1 Speaker 1

Speaker 1 will most often have a native realisation of her consonants, but some of them have a tendency towards having a Norwegian quality. For example, she realises /t/ and /d/ as denti-alveolar, which means that the tip of the tongue touches both the alveolar ridge and the teeth when articulating these sounds. This has the consequence that when she pronounces the alveolar stops in this way in English, the contrast between the alveolar stops /t, d/ and the dental fricatives /θ, ð/ becomes less distinct. This becomes especially clear when she pronounces /ð/ and /d/, as both are substituted by the denti-alveolar stop /d̪/. She does, however, seem to maintain a clearer distinction between /t/ and /θ/. She also has an American realisation of /t/ and /d/, which means that she realises them as the alveolar flap /ɾ/ in non-initial position. She also never makes a contrast between /s/ and /z/, and always realise both as /s/. In addition to this, she tends towards pronouncing the spelled <r> as /ɹ̠/ also post-vocally, instead of realising it as part of an r-coloured vowel, which is more common in GA. The last thing to note about Speaker 1’s consonant realisations is that she realises the sibilant /ʃ/ as /ʃ/, and the affricate /dʒ/ as /dʃ/, whereas the sibilant /ʃ/ and the affricate /tʃ/ are pronounced correctly.

Many of Speaker 1’s vowels have a different quality from those of the native accents RP and GA, but the vowels she does realise correctly tend towards GA rather than RP. This can, for example, be heard in her realisation of the words wanders and thought. She usually makes the
distinction between short and long vowels, except for the distinction between /ɪ:/ and /u/, which are both always realised as /i/. Her /e/ is slightly more open than the English /e/ sounding more like /e/, which might make hearing the distinction between /e/ and /æ/ more difficult. She also usually substitutes /ɔ/ and /u:/ for the Norwegian /ʉ/ and /ʉː/. In addition to this, her /ɔ/ has a slightly more front-back realisation than what is usually heard in RP and GA approaching a /ɔ/. In two of the cases where /ʌ/ appears in this study where it is spelled with <u>, Speaker 1 substitutes the vowel for the Norwegian /ø/. In wonders, however, she pronounces the vowel correctly. Lastly, she does make any distinction in her pronunciation of warriors and worriers, which most likely means that she struggles with the vowel /ɜ:/.

4.1.2 Speaker 2

Speaker 2’s consonants display many of the same features as those of Speaker 1. They are largely native, but some contrasts are not made, and some consonants are realised with a Norwegian quality. Speaker 2 is also less consistent than Speaker 1 and has a more variable learner language than Speaker 1. In contrast with Speaker 1, Speaker 2’s alveolar stops are usually not realised as denti-alveolar. The only exception to this is when she says the word breed in which the last consonant is realised as the denti-alveolar /d̪/. Also Speaker 2 realises /t/ and /d/ as the alveolar flap /ɾ/ in non-initial position. Speaker 2 is, however, quite consistent in her substitution of /ð/ with /f/, and word-initial /ð/ with /d/. When the /ð/ is not word-initial, it is realised correctly. Speaker 2 does not make any distinction between /s/ and /z/ either, and, like Speaker 1, realises /ʒ/ as /ʃ/, and /dʒ/ as /dʃ/.

Speaker 2’s vowels seem to fluctuate more between GA and RP realisations than Speaker 1’s. Like Speaker 1, Speaker 2’s /e/ is slightly more open than the English /e/, and her /ɔ/ is slightly more front-back quality compared with the English /ɔ/. Unlike Speaker 1, Speaker 2 does distinguish between long and short /i/, but she always substitutes /a/ for /i/. Speaker 2 is most inconsistent when it comes to her realisations and substitutions of the vowel /ʌ/. When this vowel occurs in the word bunker she pronounces it correctly, but when it occurs in the words butt and truck she pronounces it /ø/. She does not distinguish between her pronunciation of the words warriors and worriers either, realising both, as well as the word wonders, with the vowel /ə/. What is somewhat peculiar about Speaker 2’s vowel quality is that her vowels sometimes become quite nasal. This can be heard especially well in her realisation of the word veil which is realised as /veːl/, but also to some degree in her
realisation of the vowel in bear. Lastly, Speaker 2 uses few r-coloured vowels, and has a largely RP pronunciation in this respect.

4.1.3 Speaker 3

Speaker 3 has a quite close approximation to an RP accent with only a few inaccurate realisations and substitutions. Her consonants are largely realised with an RP quality. The only exception to this is that she does not make the distinction between /s/ and /z/, and that she also realises /ʒ/ as /ʃ/, and /dʒ/ as /dʃ/. As for her vowels, the only source of inaccuracy is the vowel /ʌ/. When spelled with <u> in bunker, butt, and truck it is correctly realised, only with a slightly fronted quality compared to the traditional RP /ʌ/. When /ʌ/ is spelled with <o> as in wonders, and worriers it is realised as /ɒ/. This means that she makes no distinction when pronouncing wanders/wonders, and warriors/worriers. She does not use any centring diphthongs either, but this has become quite common among RP speakers as well. Lastly, it should be noted that Speaker 3 sometimes makes contractions that are not present in the source text. This mostly only happens in the phrase “The veil is blue.” and “It was a delusion”, which become /ðə vejls blu:/ and /twəs ə də'luːʃn/.

4.1.4 Speaker 4

Unlike the other speakers, Speaker 4 is a native speaker of English. She grew up in York, which is in the north of England, but displays very few typically Northern traits in these recordings. There are only a couple of exceptions to the RP accent in her recordings. The first is that she tends to glottalize her t’s, especially with the final consonant in the word that. Another is that she, like Speaker 3, does not use any centring diphthongs. Lastly, she realises the vowel in the words of the STRUT set as /ə/, which is typical for the northern accents of British English (Watt & Tillotson 2001, 291). This means that the vowel in bunker, butt, and truck are realised as /ə/, while the vowels in worriers, and wonders are still realised as /ʌ/.
4.2 Part 1: Short phrases

4.2.1 Data adjustments and interpretations

As it would be unrealistic to expect all the respondents to record what they heard in each recording using the international phonetic alphabet, the respondents were asked to record what they heard using the traditional spelling conventions of the English language. As a result of this, combined with the fact that not all of the respondents are native speakers of English, it was unclear if some of the phrases the respondents recorded were transcribed incorrectly because the respondent heard something other than what was in the source material, or if the mistake stemmed from the respondent not knowing how to spell the word or not being familiar with the word in question at all.

A word-pair that yielded particularly many cases where interpretation was necessary was the pair of words: <warriors/worriers>, both Respondent 1 and Respondent 7 transcribed both of these words as <worriers>. This spelling makes it unclear which vowel they were hearing from the speakers. Despite this, the fact that they spelled the word the same way for both the phrase with <warriors> and the one with <worriers>, signifies that they, like most of the other respondents, thought they heard the same word spoken both times. For the sake of simplicity all cases with the transcription <worriers> was interpreted as an incorrect transcription.

Another pair of words that turned out to be challenging for many of the same reasons was: <badge/batch>. Again, Respondent 1 and Respondent 7 transcribed these words the same, but incorrect, as <butch>. The fact that they also with this word had chosen to transcribe both <badge> and <batch> as <butch>, which, unlike <worriers>, is actually a word in itself, made it seem likely that they both heard something other than what the speakers intended and that they heard the same word in both phrases. Therefore, all the cases where <batch> or <badge> is transcribed as <butch> have been marked as incorrect.

Because the survey service that was used to host the survey chose 10 phrases from each speaker for each respondent to transcribe at random, there was unfortunately two phrases that went without transcriptions for both Speaker 2 and Speaker 3. In order to get comparable intelligibility scores for all three speakers, these phrases were taken out from the calculation of the total intelligibility score for every respondent. Despite this, the results for the other speakers for these phrases are still displayed in table 4.1 below, in the rows that are marked
with light grey. These same phrases are also marked with light grey in table 4.2 as well, to signify that the average intelligibility scores for these phrases are based on fewer data points than for the other phrases.

### 4.2.2 Speaker intelligibility scores

The results from the first part of the survey quite clearly show that some speakers were more intelligible than others. The total intelligibility score for each speaker shows that in this case their level of evaluated accentedness correlates to their level of intelligibility. Not unexpectedly the native speaking Speaker 4 achieved the highest intelligibility score with a total score of 19.08. Speaker 2, who was previously predicted to have the strongest accent also achieved the lowest intelligibility score, with a total score of 14.00. Even so, the difference between the highest and the lowest score is only at 5.08 points, with a variance of 1.82, which means that the differences between the speakers is relatively minor.

**Table 4.1** Intelligibility scores for each phrase and speaker

<table>
<thead>
<tr>
<th>Phrases</th>
<th>Speaker 1</th>
<th>Speaker 2</th>
<th>Speaker 3</th>
<th>Speaker 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>He has a bat.</td>
<td>0.50</td>
<td>0.00</td>
<td>0.50</td>
<td>1.00</td>
</tr>
<tr>
<td>The veil is blue.</td>
<td>0.50</td>
<td>0.50</td>
<td>0.25</td>
<td></td>
</tr>
<tr>
<td>They fought.</td>
<td>1.00</td>
<td>1.00</td>
<td>1.00</td>
<td>0.67</td>
</tr>
<tr>
<td>That is a phase.</td>
<td>0.33</td>
<td>0.00</td>
<td>0.20</td>
<td>0.50</td>
</tr>
<tr>
<td>She has a batch.</td>
<td>0.67</td>
<td>0.75</td>
<td>0.75</td>
<td>0.50</td>
</tr>
<tr>
<td>The bear is warm.</td>
<td>0.80</td>
<td>0.83</td>
<td>1.00</td>
<td></td>
</tr>
<tr>
<td>They are warriors.</td>
<td>0.75</td>
<td>0.50</td>
<td>0.80</td>
<td>0.75</td>
</tr>
<tr>
<td>Over there is a bunker.</td>
<td>0.67</td>
<td>0.80</td>
<td>0.50</td>
<td>1.00</td>
</tr>
<tr>
<td>He has a butt.</td>
<td>0.00</td>
<td>0.67</td>
<td>0.67</td>
<td>1.00</td>
</tr>
<tr>
<td>They breed.</td>
<td>0.20</td>
<td>0.00</td>
<td>0.40</td>
<td>0.50</td>
</tr>
<tr>
<td>It was a delusion.</td>
<td>1.00</td>
<td>1.00</td>
<td>0.67</td>
<td>1.00</td>
</tr>
<tr>
<td>It was a track.</td>
<td>0.75</td>
<td>0.67</td>
<td>0.67</td>
<td>1.00</td>
</tr>
<tr>
<td>They are free.</td>
<td>1.00</td>
<td>1.00</td>
<td>1.00</td>
<td>1.00</td>
</tr>
<tr>
<td>She saw his plays.</td>
<td>0.00</td>
<td>0.00</td>
<td>0.25</td>
<td></td>
</tr>
<tr>
<td>There was a price.</td>
<td>1.00</td>
<td>1.00</td>
<td>1.00</td>
<td>1.00</td>
</tr>
<tr>
<td>He wonders.</td>
<td>1.00</td>
<td>1.00</td>
<td>1.00</td>
<td>1.00</td>
</tr>
<tr>
<td>The beer is warm.</td>
<td>0.75</td>
<td>1.00</td>
<td>0.75</td>
<td>0.50</td>
</tr>
<tr>
<td>That is a face.</td>
<td>1.00</td>
<td>0.67</td>
<td>0.75</td>
<td>1.00</td>
</tr>
<tr>
<td>They breathe.</td>
<td>1.00</td>
<td>0.75</td>
<td>1.00</td>
<td>1.00</td>
</tr>
<tr>
<td>He wanders.</td>
<td>0.50</td>
<td>0.00</td>
<td>0.00</td>
<td>0.20</td>
</tr>
<tr>
<td>It was a dilution.</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>The whale is blue.</td>
<td>0.00</td>
<td>1.00</td>
<td>0.67</td>
<td></td>
</tr>
</tbody>
</table>
4.2.3 Phrase intelligibility

Looking at the table below it becomes obvious that some of the phrases were more easily understood than others. This also means that this table shows clear evidence that there are indeed some phonemes that are less intelligible than others in Norwegian-accented English. The most obvious of these is the fact that none of the speakers made the distinction between /s/ and /z/, and that none of the speakers made the distinction between their use of vowel in warriors/worriers and wonders/wanders, which is also most likely why these phrases make out four of the five bottom entries.

The only other phrases to fall below an intelligibility score of 0.50 are “They breed.”, “The veil is blue” and “It was a dilution.” The fact that “They breed.” achieved an intelligibility score below 0.50 is most likely due to the fact that two of the speakers tested realised the /d/ in this word as the denti-alveolar /d̪/, which might make it difficult to distinguish from the dental fricative /ð/ in breathe, which was what replaced breed when it was transcribed incorrectly by the respondents. As all the speakers made the distinction between /w/ and /v/ in part one it is actually somewhat surprising that “The veil is blue.” should achieve an intelligibility score of lower than 0.50, though this might be explained by the fact that veil is not a very commonly used word in the English language and might therefore be unfamiliar to the respondents. This is most likely also the reason why “It was a dilution.” achieved an intelligibility score of 0. Most of the speakers hesitated on this word in the recordings, and as Speaker 4 was the only one to make a contrast between /ʒ/ and /ʃ/, delusion rather than dilution should have been transcribed incorrectly if the respondents were familiar with the word.

<table>
<thead>
<tr>
<th></th>
<th>1,00</th>
<th>0,50</th>
<th>0,75</th>
<th>1,00</th>
</tr>
</thead>
<tbody>
<tr>
<td>She has a badge.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>They are three.</td>
<td>0,75</td>
<td>0,00</td>
<td>0,50</td>
<td>0,80</td>
</tr>
<tr>
<td>There was a prize.</td>
<td>0,00</td>
<td>0,00</td>
<td>0,67</td>
<td>0,33</td>
</tr>
<tr>
<td>It was a truck.</td>
<td>0,33</td>
<td>0,50</td>
<td>1,00</td>
<td>1,00</td>
</tr>
<tr>
<td>They are worriers.</td>
<td>0,00</td>
<td>0,00</td>
<td>0,00</td>
<td>0,33</td>
</tr>
<tr>
<td>They thought.</td>
<td>1,00</td>
<td>0,20</td>
<td>1,00</td>
<td>1,00</td>
</tr>
<tr>
<td>She saw his place.</td>
<td>0,75</td>
<td>1,00</td>
<td>0,67</td>
<td>1,00</td>
</tr>
<tr>
<td>Over there is a banker.</td>
<td>1,00</td>
<td>1,00</td>
<td>1,00</td>
<td>0,00</td>
</tr>
<tr>
<td><strong>Total intelligibility score</strong></td>
<td>16,95</td>
<td>14,00</td>
<td>17,23</td>
<td>19,08</td>
</tr>
</tbody>
</table>
Despite the vowel /ʌ/ being predicted to cause intelligibility issues for Norwegians, it seems this is only the case for the distinction between the minimal pairs with /ʌ/ and /ɒ/ (GA: /ʌ/ and /ɑ:/, or /ɔ:/ and /ɜ:/). In fact, the vowel /ʌ/ has not caused major intelligibility issues for any of the words in the STRUT set, which means that realising this vowel as /ø/ is most likely not a hinder to intelligibility. The reason for this is probably the fact that even though /ø/ is not a correct realisation, the speakers still make a distinction between it and the phoneme /æ/, which they were tested against. As the phoneme /ø/ does not exist in the English language either, it is also unlikely to be mistaken for any other vowel.

Table 4.2 Average intelligibility scores for each phrase

<table>
<thead>
<tr>
<th>No.</th>
<th>Phrases</th>
<th>Average intelligibility score</th>
<th>No.</th>
<th>Phrases</th>
<th>Average intelligibility score</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>They are free.</td>
<td>1,00</td>
<td>16</td>
<td>It was a truck.</td>
<td>0,71</td>
</tr>
<tr>
<td>2</td>
<td>There was a price.</td>
<td>1,00</td>
<td>17</td>
<td>They are warriors.</td>
<td>0,70</td>
</tr>
<tr>
<td>3</td>
<td>He wonders.</td>
<td>1,00</td>
<td>18</td>
<td>She has a batch.</td>
<td>0,67</td>
</tr>
<tr>
<td>4</td>
<td>They breathe.</td>
<td>0,94</td>
<td>19</td>
<td>He has a butt.</td>
<td>0,58</td>
</tr>
<tr>
<td>5</td>
<td>They fought.</td>
<td>0,92</td>
<td>20</td>
<td>The whale is blue.</td>
<td>0,56</td>
</tr>
<tr>
<td>6</td>
<td>It was a delusion.</td>
<td>0,92</td>
<td>21</td>
<td>They are three.</td>
<td>0,51</td>
</tr>
<tr>
<td>7</td>
<td>The bear is warm.</td>
<td>0,88</td>
<td>22</td>
<td>He has a bat.</td>
<td>0,50</td>
</tr>
<tr>
<td>8</td>
<td>That is a face.</td>
<td>0,85</td>
<td>23</td>
<td>The veil is blue.</td>
<td>0,42</td>
</tr>
<tr>
<td>9</td>
<td>She saw his place.</td>
<td>0,85</td>
<td>24</td>
<td>They breed.</td>
<td>0,28</td>
</tr>
<tr>
<td>10</td>
<td>She has a badge.</td>
<td>0,81</td>
<td>25</td>
<td>That is a phase.</td>
<td>0,26</td>
</tr>
<tr>
<td>11</td>
<td>They thought.</td>
<td>0,80</td>
<td>26</td>
<td>There was a prize.</td>
<td>0,25</td>
</tr>
<tr>
<td>12</td>
<td>It was a track.</td>
<td>0,77</td>
<td>27</td>
<td>He wanders.</td>
<td>0,18</td>
</tr>
<tr>
<td>13</td>
<td>The beer is warm.</td>
<td>0,75</td>
<td>28</td>
<td>She saw his plays.</td>
<td>0,08</td>
</tr>
<tr>
<td>14</td>
<td>Over there is a banker.</td>
<td>0,75</td>
<td>29</td>
<td>They are worriers.</td>
<td>0,08</td>
</tr>
<tr>
<td>15</td>
<td>Over there is a bunker.</td>
<td>0,74</td>
<td>30</td>
<td>It was a dilution.</td>
<td>0,00</td>
</tr>
</tbody>
</table>

4.3 Part 2: Long text

4.3.1 Transcriptions of the long text

The results from the transcriptions of the long text show almost no incorrect transcriptions of any words. The only word that was ever transcribed incorrectly by any respondent was one respondent that transcribed *whore* instead of *horror* for Speaker 1. These transcriptions are, unfortunately, of a less representative nature than those collected in part one of the Survey, as they are based on maximum four transcriptions (for Speaker 1), and one time only one transcription (for Speaker 2). What they might indicate, though, is that few of the
intelligibility problems that were observed in part one of the test are likely to cause problems when they occur in context. This indication does, however, assume that the written context of the transcriptions in part two of the survey, does not help the intelligibility of the speakers to such a degree that any misunderstandings that would have otherwise occurred are prevented.

4.3.2 Qualitative follow-up questions

The first question that the respondents were asked to answer after completing the transcription in part two of the survey was to rate how easy the speakers in the survey were to understand on a scale of 1 to 10, where 1 was very easy to understand and 10 was completely unintelligible. On average they were scored 2.67, which means that despite some difficulties the respondents still perceived the Norwegian accent as being somewhat closer to “somewhat intelligible” than to “completely intelligible”, but still quite close to the middle of these.

The question of if there was something in particular that made the speakers difficult to understand received a several different notes. These are largely in line with the evaluations made of the different speakers in section 4.1 of the survey. One of the American respondents gave a very detailed answer to this question and mentioned both that the distinction between /v/ and /w/, and /θ/ and /f/ very difficult. She also points out that it is hard for an American to distinguish between warrior and worrier when the speaker is speaking with a British accent. Making this difference was probably not made any easier by the fact that only Speaker 4 actually made this distinction. Despite her reporting that she experienced problems with the comprehensibility of the speakers, however, her quite accurate transcriptions of the speakers show that she has in fact had very few problems with their intelligibility. One respondent did actually mention the distinction between beer and bear in particular, which was predicted to be a problem by both Haukland (2016) and Rugesæter (2012), though the fact that both of these phrases achieved an intelligibility score of over 0.75 indicates that this respondent probably is in the minority. Two respondents also mentioned that the speakers were made more difficult to understand when they mumbled, or spoke too quickly, which is probably most relevant for the transcriptions in part two of the survey.

On the question of whether some speakers were easier to understand than others, 7 out of 10 answered yes, the remaining 3 answered that there were only minor differences between the speakers. When asked to elaborate on their answer (if they answered yes), both Speaker 3 and Speaker 4 were specifically mentioned as easier to understand than Speaker 1 and 2 by several
respondents. The reason for this was mostly stated as being that they enunciated better or that they spoke with better articulation. One respondent actually ranks them as Speaker 3 being the easiest, followed by Speaker 4, then Speaker 1, and lastly with Speaker 2 as the most difficult to understand. One respondent did, however, deviate from the others in their answer to this question, as they said: “It was easier to understand speakers that speak [E]nglish as a second language, maybe as a beginners- because they spoke slowly and more carefully.” With this answer she is most likely referring to Speaker 1, but she might be referring to Speaker 3 as well. Overall, the respondent seem to have a slight preference to Speaker 3 over Speaker 4 as being the easiest to understand, despite Speaker 4 achieving the highest intelligibility score. This, like the American respondent’s evaluation of Norwegian-accented English, shows that comprehensibility is not always connected with intelligibility.
5 Discussion of results

The results of this study to some degree confirms the decisions made by Jenkins (2001, 17) when compiling her Lingua Franca Core. One of the substitutions that seemed to cause the most severe misunderstandings was the fact that the Norwegian speakers did not make a contrast between the consonants /s/ and /z/, which Jenkins (ibid.) posits as crucial to mutual intelligibility when English is used as a lingua franca. The fact that many of the speakers did substituted the dental fricatives /θ/ and /ð/ without this causing major intelligibility problems also confirms Jenkins’ (ibid.) decision to leave this contrast out of the Lingua Franca Core as well.

Jenkins’ (ibid.) assertion that vowel quality is not of absolute importance to mutual intelligibility when English is used as a lingua franca, is not necessarily disproved by the results of this survey, but it does add a requirement to this assertion. This is because, the results of this study indicate that a change in vowel quality not necessarily will lead to misunderstandings, but that a lack of contrast between the realisations of different vowels might do. For Norwegians this is especially true for the contrasts between /ʌ/ and /ʊ/ (GA: /ʌ/ and /ʊ:/, or /ɑ:/ and /ɔ:/, or /ɑ:/ and /ɜ:/), though not necessarily for the words in the STRUT set, if they are realised by /ø/.

One insight that this study has made to the continued charting of the intelligibility of Norwegian-accented English, that seems to be unique to this study, is the fact that speakers who realise /d/ and /t/ as denti-alveolar stops run the risk of their alveolar stops being confused with dental fricatives. This proved especially true for the denti-alveolar /θ/ which was confused with the dental fricative /ð/ on several occasions by the respondents.

5.1 Role of the listener

The role played by the listener in this study seems to be most evident in the fact that the listener’s lexical knowledge turned out to play such an important part in whether some phrases were correctly transcribed or not. As the speakers’ pronunciation of neither veil nor dilution usually contained any mistakes, their low intelligibility scores can most likely be explained by the respondent lacking familiarity with these words. Because there were so few respondents, however, it is difficult to determine whether the respondents’ previous
experience with the Norwegian-accented English, or their first language background, had any effect on their ability to understand Norwegian-accented English.

This study also to some degree confirms Kennedy & Trofimovich’s (2008, 471-2) findings that context improves the intelligibility of spoken learner English. Though this confirmation can only be said to be tentative at best, considering the limitations afforded by the choice of method for part two of the survey. If the results of part two of the survey cannot be said to be too limited by their written context, they to some degree confirm one of two things: Either, the respondents in this study can all be considered bilingual NNSs, as described by Jenkins (2002, 89-90), because they were helped by the added context of part two of the survey in understanding NNSs; Or, the fact that the respondents in this survey were all helped by the added context of part two disproves Jenkins’ (ibid.) assertion that only NSs and bilingual NNSs can be helped by context in understanding NNSs.

5.2 Implications for teaching of accent in Norway

The results of this study confirm that the pronunciation goal of the learner does not necessarily need to be the native speaker ideal, but also shows that some guidelines beyond aiming to follow “central patterns for pronunciation, intonation, word inflection” (Kunnskapsdepartementet 2013) are still required. As of today, the theory seems to be that Norwegian students get so much exposure to spoken English that explicit pronunciation training is unnecessary (Rugesæter 2012, 128-9). All of the speakers in this survey fall within an age group that means that they finished some of their primary and all of their secondary schooling in Norway under the current English curriculum. The fact that some of the pronunciation mistakes (/s, z/, /ʌ/) were so consistently present in all the speakers and that they also caused quite significant problems for their intelligibility, shows that more, earlier and more explicit pronunciation training should be implemented in Norwegian schools.

Several studies have shown that pronunciation instruction can have a positive effect on intelligibility (Derwing, Munro & Wiebe 1997, 1998, ref. in Derwing & Munro 2009, 481-2), but there are also several indications that this kind of training has the best effect when implemented at an early age (Jin & Liu 2014, 584; Rugesæter 1995, ref. in Rugesæter 2012, 124-6). The importance of this fact is amplified by the so-called Matthew effect, explained by Trofimovich (2011, 150) in the following way: “Simply put, an early success with a particular
skill gives an individual an advantage later, compared to individuals who do not have an advantageous experience with this skill early on.” In other words, early exposure and experience with English is likely to encourage the student to seek out exposure and experience with the language on their own as well (ibid. 151).

This instruction can be achieved by several means. Frequency is one aspect that has shown to have an effect on learning (Trofimovich 2011, 142), this means that students would benefit from exposure to the phonemes that are likely to cause issues for them. Another way of teaching them the phonemes that they are likely to struggle with is to present them in contrastive pair and practice the differences. As Rugesæter (2012, 127) points out, no instruction book that is developed to be a general guide to learning English pronunciation for learners of English of all first language backgrounds, is likely to cover all the pronunciation needs of a Norwegian student of English. Therefore, there is also a need for increased focus on developing teaching materials for giving Norwegian students of English the tools they need to achieve maximum intelligibility.
6 Conclusion

This study has found that despite Norwegian students having wide exposure to English in their everyday-lives, they still make pronunciation mistakes that hinder their communication with others in situations where English is used as a lingua franca. Chief among these mistakes are the fact that they fail to make a contrast between /s/ and /z/, substituting both with /s/, and their failure to make a contrast between /ʌ/ and /ɒ/ (GA: /ʌ/ and /ɑ:/, or /ɔ:/ and /ɜ:/, or /ɑ:/ and /ɜ:/). This proves that earlier and more explicit pronunciation instruction is needed in Norwegian schools.

It was also discovered that realization of the alveolar stops as denti-alveolar stops might make them susceptible to being confused with the dental fricatives. This is especially true for the denti-alveolar /d̪/ which was confused with the dental fricative /ð/ by several respondents. As long as this realisation is avoided, there seemed to be little to prove that substitution of the dental fricatives is a hinder for intelligibility. The same proved true for the other vowels that were realised with different qualities. As long as the contrast between different vowels is kept, the realisation seems to play only a minor part in intelligibility.

The study also found that one of the most important aspects of the listener is their lexical knowledge, as this seemed to have a significant effect on the results of this study. The study also seemed, to some degree, to be able to confirm the fact that context plays an important role in the intelligibility of English spoken by non-native speakers. The study was, however, not able to ascertain any relation between the respondents’ previous experience with Norwegian-accented English, or their first language background, and their ability to understand it. This was largely due to a lack of respondents.

6.1 The way forward

There are still many aspects of Norwegian-accented English that need to be investigated. Very little research has, for example, been conducted on the suprasegmental features of Norwegian-accented English. Among these, both research into Norwegian stress-patterns and intonation might be of interest. In light of the rising intonation pattern for statements common in the eastern part of Norway, might be especially interesting to look at Norwegians’ ability to
distinguish the intonation patterns for questions and statements when speaking English, and whether this hinders their communication with others.

It is also possible, maybe even desirable, to conduct a similar study to this on a larger scale. This would preferably be done with a survey host that allows for a less confusing survey design. There is also the option to accompany the recordings with cartoons, which would eliminate the chance of the respondents not knowing of the options and the intelligibility of the speaker being limited by the respondents’ lack of lexical knowledge. This does, however, limit the chances of them transcribing previously unanticipated options. It is also possible to extend the current study to include even more phonemes and contrasting pairs.
References


Appendix

Appendix A: Biographical questionnaire

This questionnaire was originally provided as part of the internet survey. For the sake of saving space, the questions have been converted into a document, as the graphics of the survey design would take up several pages.

1. What is your age?
2. What is your gender?
3. What is your nationality?
4. What is your mother tongue?
5. Did you also grow up with a second language?
6. If yes, which?
7. Have you ever spoken to a Norwegian in English before?
8. How familiar with Norwegian-accented English would you say you are?
   a. Very
   b. Somewhat
   c. Vaguely
   d. Completely unfamiliar
9. When you usually listen to a native speaker of English, how much would you say you understand?
   a. Everything
   b. Almost everything, I only miss an unfamiliar word here or there
   c. Most, but I sometimes struggle if they talk too fast, unclearly or in an unfamiliar accent
   d. Some, but I also need to pick up some meaning from context and body language
10. How often do you use English as a lingua franca?
   a. Regularly, among friends and at school/work
   b. Regularly, at school/work
   c. Regularly, among friends
   d. Sometimes, among friends or at school/work
   e. Rarely, mostly in vacation
11. Are there any of the native accents of English you are more comfortable with or you find easier to understand than others? If yes, which?
Appendix B: Original recording material

Semantically unpredictable sentences

1. He has a bat.
2. The veil is blue.
3. They fought.
4. That is a phase.
5. She has a batch.
6. The bear is warm.
7. They are warriors.
8. Over there is a bunker.
9. He has a butt.
10. They breed.
11. It was a delusion.
12. It was a track.
13. They are free.
14. She saw his plays.
15. There was a price.
16. He wonders.
17. The beer is warm.
18. That is a face.
19. They breathe.
20. He wanders.
21. It was a dilution.
22. The whale is blue.
23. She has a badge.
24. They are three.
25. There was a prize.
26. It was a truck.
27. They are worriers.
28. They thought.
29. She saw his place.
30. Over there is a banker.
It was a rare occasion that Joyce wanted to celebrate her birthday, but the one time she actually did, everything went wrong. Her first problem was to figure out who she wanted to invite. Her mother’s family and her father’s family were not very good friends, and if she were to invite both World War Three would break out. The choice between the two families would be too difficult. Therefore, she decided to keep the celebration to only her friends.

The day before the party she had to go shopping for supplies. She went to a big store where she could get both decorations and food. After spending a whole hour in the store her cart was completely full. Unfortunately, when she arrived at the cash register, she discovered that she had forgotten her wallet. She thought it was very embarrassing to explain this to the cashier and she fought tears as she did it.

On the day of the party her bad luck continued. When she woke up, she discovered to her horror, that her refrigerator had broken during the night, and everything inside it had gone bad. The weather outside was also horrible, with heavy rain and wind. She therefore had to have the party inside and serve lukewarm drinks at her party. She was also forced to order pizza from the local pizza place, instead of making the food herself. Throughout the day, her confidence in her own party had deteriorated and she had to spend some time in front of the mirror to convince herself not to cancel the whole thing.

Despite all of her bad luck during the preparations for the party, the guests enjoyed themselves. As she was an avid reader, and a literature student, Joyce received many books as birthday gifts. She also got a gift certificate at her favourite restaurant. If Joyce had the choice to celebrate her birthday again, she might not have done it, but she didn’t regret her decision to celebrate either.
Appendix C: Native language transcriptions of recording material

All of the following transcriptions have been made according to Cambridge’s *English Pronouncing Dictionary*, 18th edition by Daniel Jones (2011).

**Short phrases**

When there is a choice between using the strong form or the weak form of the word, the word is transcribed in the following way: `/strong form/weak form/`.

If a phrase contains a word that have several allowed pronunciations, the whole phrase is transcribed once with one option, and another time with the other options, these transcriptions are then separated in the following way: `/phrase option 1/ | /phrase option 2/`.

Superscript phonemes signify that the inclusion of this sound often depends on the tempo or preference of the speaker.

**RP**

1. `/hi:/hi hæz ə bæt/`
2. `/ðə vei ɪz blu:/`
3. `/ðeɪ fɔːt/`
4. `/ðæt ɪz ə feɪzd/`
5. `/ʃi:/ʃi hæz ə bætʃ/`
6. `/ðə beə ɪz wə:m/`
7. `/ðeɪ ə:/əˈwɒrɪəz/`
8. `/əʊvə ə ɪz ə ˈbaŋka/`
9. `/hi:/hi hæz ə bʌt/`
10. `/ðeɪ bri:d/`
11. `/ɪt wəz ə drɪˈluːzʰɪŋ/ | /ɪt wəz ə drɪˈluːzʰɪŋ/`
12. `/ɪt wəz ə træk/`
13. `/ðeɪ ə:/ə fri:/`
14. `/ʃi:/ʃi sə ˈhɪzəz/pleɪz/`
15. `/ðeə/ðə wəz ə praiəs/`
16. `/hi:/hi ˈwʌndəz/`
17. `/ðə biər ɪz wə:m/`
18. /ðæt iz ə feis/
19. /dei briːd/
20. /hi:/hi 'wændoʊz/
21. /ɪt wæz ə dɛr'lu:z'n/ | /ɪt wæz ə dɪ'luːʒ'n/ | /ɪt wæz ə dɛr'ljuːʒ'n/ | /ɪt wæz ə dɪ'rjuːʒ'n/
22. /ðə weil iz bluː/
23. /ʃi:/ʃi hæz ə bætʃ/
24. /dei æ:/ə 0riː/
25. /deəðə wæz ə præɪz/
26. /ɪt wæz ə træk/
27. /deɪ æːr 'wærɪəz/
28. /deɪ ðət/
29. /ʃi:/ʃi soː hɪz/iz pleɪs/
30. /'ʌʊvə də iz ə 'bæŋkə/

GA

1. /hi:/hi hæz ə bæt/
2. /ðə weil iz bluː/
3. /deɪ fuːt/ | /deɪ fɔːt/
4. /ðæt iz ə feiz/
5. /ʃi:/ʃi hæz ə bætʃ/
6. /ðə ber iz wɔːrm/
7. /deɪ æːə r 'wɔːrjaʊz/ | /deɪ æːə r 'wɜːrjoʊz/
8. /'ʌʊvə dɛr iz ə 'bæŋkə/
9. /hi:/hi hæz ə bæt/
10. /dei briːd/
11. /ɪt wæz ə dɛr'lu:ʒ'n/
12. /ɪt wæz ə træk/
13. /deɪ æːr friː/
14. /ʃi:/ʃi soː hɪz/iz pleɪz/ | /ʃi:/ʃi soː hɪz/iz pleɪz/
15. /dər/də wæz ə prais/
16. /hi:/hi 'wændəʊz/
17. /ðə bir iz wɔːrm/
18. /ðæt iz ə feis/
19. /dei briːd/
When there are several accepted manners of pronunciation, all the alternative pronunciations are listed separated by slashes in the following manner:

"æktʃəli/æktʃuəli/æktʃuli/æktʃəli"

Superscript phonemes signify that the inclusion of this sound often depends on the tempo or preference of the speaker.

**RP**

/ɪt wæz ə rɛər æˈkɛrɪŋ əʊt dʒɔɪs ˈwɒntɪd tə ˈseləbret hə b3:ðeɪ/,

/ˈbæt əʊ wʌn tɔm ʃi ˈæktʃəli/ˈæktʃuəli/ˈæktʃuli/ˈæktʃəli dɪd/, /ɪvriθɪŋ went rɒŋ/.  

/haː fɜːst ˈprɑːbləm/ˈprɒbləm/ˈprɒbləm wæz tə ˈfɪɡər aʊt hʊ/hʊː ʃi ˈwɒntɪd tʊ/tu ɪnˈvɑːt/.  

/haː ˈmʌdəz ˈfæməlɪ/ˈfæməlɪ ənd/ən hə ˈtuːdəz ˈfæməlɪ/ˈfæməlɪ wə nɔt veri god frendz/,  

/ənd/ən ɪf ʃi wə tʊ/tu ɪnˈvɑːt bəʊθ wɜːld wː əriː wɜːd breɪk aʊt/.  

/ðə dʒɔɪs brɪˈtwiːn/bəˈtwiːn də tuː: ˈfæməlɪz/ˈfæməlɪz wəd bi tuː ˈdɪfɪkəlt/.  

/ˈdɛəfəː/  , /ʃi dɪˈsɑːdɪd/dəˈsɑːdɪd tə kɪ:p əʊ tə ˈseləbrɛʃən tʊ/tu əʊnli hə frendz/.  

/ðə dɪ ˈbrɪfəː/boʊʃə:  ə pəːti ʃi hæd tə gəʊ ˈʃɒpɪŋ fə səˈplɑːz/.  

/ʃi went tʊ/tu ə bɪg stɔː wɛə ʃi kæd ɡet bəʊθ dɛkəˈreɪʃənz ənd/ən ˈfjuːd/.
/aːftə spendin ə hæʊl 'aʊər in ðə stə: ho kæ:t wæz kəm'pli:ti fʊl/.

/ən'fɔtʃnætli/ən'fɔtʃnætli/ /wən ʃi ə'raɪvd æt ðə kæʧ 'redʒista/.
/fi dɪsk'ævəd ðæt ði hæd fə'grɛtn æn 'wʊlt/.
/fi ðæt ði wæz veri im'bærəsɪŋ/ /im'bærəsɪŋ tə/tu ik'splem/ /ek'splem ði sə ðə kæʧə/kæʃə ən fi fɔ:t tʃæz æz ði dɪd ðɪ/.

/ən ðə dɛi æn ðə 'pæ:tɪ hə bæd læk kən'tɪnju:d/.
/wən ʃi wəʊk æp/ /fɪ dɪsk'ævəd tə hæ ˈhʊra/.
/dæt ðə ri'frɪdʒ'reɪtə/ /ri'frɪdʒ'reɪtə hæd b्रɔʊk'n 'dʒuərɪŋ/'dʒɔ:riŋ/'dʒərɪŋ ðə nɔt/.
/wən ˈevrɪnoŋ in'saɪd ðt hæd ɡɔn bæd/.
/ʃi ˈdeətə: hæd tə hæv ðə pæ:tɪ in'saɪd ðə səv lu:k'wə:m drɪŋks æt hæ pæ:tɪ/.
/mɪstd əv ˈmeɪkɪŋ ðə fʊ:ld hə'self/.
/θrə'æut ðə deɪt/ /hə ˈkɒnfɪdəns/ /kɒnfɪdəns in hæ əʊwn ˈpæ:tɪ hæd də'tuəri'riətɪd/də'tuəri'riətɪd æn ði hæd tə spend sˈm tæm ɪn frænt əv ðə ˈmirə tə kən'vɪn's hə'self nɔt tə 'kæn's?l ðə hæʊl ˈθɪŋ/.

/dɪ'spæt/dɪ'spæt ɔ: əv hæ bæd læk 'dʒuərɪŋ/'dʒɔ:riŋ/'dʒərɪŋ ðə prɛp'tɛl''nɪz fə ðə 'pæ:tɪ/.
/də'gests n'dʒɔɪd/ /n'dʒɔɪd əm'sɛlvz/.

/dʒɔɪs rɪ'siː/vd/ /ræ'siː/vd mən bi əks æz 'b3:0deɪ ɡɪfts/.
/ʃi ɔ:lsəʊ ɡʊt æ ɡɪft seə'tɪfɪkæt/sə: tefɪkæt/sə'tɪfɪkæt/sə'tɪfɪkæt æt hæ 'feɪvərɪt/ /feɪvərɪt 'restrənt*/.
/ɪf dʒɔɪs hæd ðə tʃɔz tə 'sɛləbret hæ 'b3:0deɪ ə'ɡen/ /ʃi mæt nɔt hæv dæn ðɪ/.
/bæt ʃi dɪd'nt rɪ'ɡret/ /rɪ'ɡret hə dɪ'siː 3n/ /dæ'siː 3n tə 'sɛləbret 'aɪədə/iː ˈðæ/.

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GA

/ɪt wæz ə rər 'kærz'n ət dʒɔɪs 'wɑːntɪd'/wɔːntɪd tə 'sələbret hə 'bɔːrədi/.

/bət ə wən təm ʃi 'ektʃuəli'/ektʃuəli/ektʃuəli/ektʃuəli did/, /'evriθəŋ went rən'rən'/.

/hə ʃɔːst 'prə:bləm wæz tə 'fɪgjuər /fɪgjʊər aʊt huu/huu: ʃi 'wɔntɪd tə/tu in'vent/.

/hə 'mædəz 'fæm̩lɪ/fæmlɪ ənd/ən hə 'faːdəz 'fæm̩lɪ/fæmlɪ wə-nət veri god frendz/.


/ðə tʃɔɪs br'twi:n/bə'twi:n də tu: 'fæmlɪlz/fæmlɪz wəd bi tu: 'dɪfɪkˈlɪt/.

/ðə-fɔːt/ /ʃi di'saidid tə kɪp ə də 'sələbrəʃən tə/tu 'oʊnlɪ hə- frendz/.

/ðə dəi bɪ'fɔːt/ bə'fɔːt ə 'paːr'ti ʃi həd tə gəu 'ʃuːpiŋ fə-se'pleɪz/.

/ʃi went tə/tu ə bɪg stər:w ər ʃi kəd get buəθ dəkə'reɪʃənz ənd/ən fuːd/.

/ə'fɛɾə 'spendɪŋ ə houl 'auː/əur ɪn ə də stər hə-kə:rt wəz kəm'pliːti fəl/.

/ˈænˈfɔːrɪŋnətli/ənˈfɔːrɪŋnətli/, /wən ʃi ə'rəʊv d tə kəʃ ˈrɛdzɪstə/.

/ʃi di'skævərd ət ʃi həd fə-'gæt'n/ʃə'rə'ɡæt'n hər 'waːlit/.

/ʃi ʊə/tʰət it wæz veri em'berəsnɪŋ/ɪm'bærəsnɪŋ tə/tu ɪkˈsplɛn/ekˈsplɛn dɪs tə ə də kæʃɪr ən ʃi fət/tʃɔːt tɜːz əz ʃi did it/.

/əːn ə də deɪ əv ə ˈpaːr'ti hər bæd lək kənˈtɪnjuːd/.

/wən ʃi wʊuk əp/, /ʃi di'skævəd tə hə- 'hərə/-.

/ˈbət ə ri'frɪdʒərɪtʃə/tə'frɪdʒərɪtʃə həd 'broukən 'dərnɪg/djɔrɪn/daːrɪŋ ə nət/, /ən ˈevriθəŋ in'saɪd tə həd ɡə:n bæd/.

/ðə ˈwɛdə aʊt'saɪd wæz ˈɔːlsoʊ/əlsoʊ 'hə'rəbəl/hə'ribəl/, /wɪd/wɪd həvɪ ɾem ən wɪnd/.

/ʃi ˈdrɪfɜː həd tə hæv ə ˈpaːr'ti ɪn'saɪd ən sə:v ˈluːkwərm driŋks ət hə- ˈpaːr'ti/.

/ʃi wæz ˈɔːlsoʊ ˈfɔːrst tə/tu ˈɔ:rdər ˈpitʃə frəm ə ˈlʊkəl ˈpiːtʃə plɛɪs/.

/ɪn'stɛd əv 'mɛrkɪŋ ə fʊd hə-ˈsɛlf/.

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/θruˈəʊt də dəl/, /hæ-ˈkaːnəftəns in hæ oon ˈpaːrti hæd dəˈriːəretɪd æn jɪ hæd tə spend səm taim in frənt əv də mɪrə tə kænˈvin’s hæ’self nɑːt tə ˈkæn’səl də hool θɪŋ/.

/dəˈspæt ələl əv hæ bæd lʊk ˈdɔrni/ˈdʒuːrni/ˈdəːnə də prəˈreɪʃənz fə də ˈpaːrti/,

/də gɛstz əndˈdʒʊəd/ˈməndʒʊəd ˈdæmˈsɛlvz/ˈdæmsɛlvz/.

/əz jɪ wɛz ˈævɪd riˈdɑːr/, /ænd ə ˈlɪtʃətʃər/ˈlɪtʃətʃər ˈstjuːdənt/ˈstjuːdənt/.

/dʒɔɪs riˈsiːvd/ræˈsiːvd mɛni ˈbəːθdɛt ɡɪfts/.

/ˈjɪ ˈɔːlsəʊ gɑːt ə ɡɪft səˈtɪfɪkət/səˈtɪfɪkət/səˈtɪfɪkət ət hæ ˈfɛrvərit/ˈfɛrvəret ˈrestɔrənt*/.

/ɪf dʒɔɪs hæd ə də ˈtʃɔɪs tə ˈsɛləbrel hæ ˈbɔːθdɛt əˈgen/, /jɪ mɑːt nɑːt hɑv dən ɪt/,

/bæt jɪ diˈdnt rɪˈɡret/rəˈɡret hæ ˈdɪsɪzən tə ˈsɛləbrel ˈiːdə/ˈaudə/.

*<restaurant> had so many variant pronunciations that only the first is given for each accent here.