RUSSIAN ACCENT IN RUSSIAN NATIVE SPEAKERS OF DANISH AS A SECOND AND FOREIGN LANGUAGE

Master thesis

by

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Summary

The research goal of this master thesis was two-fold 1) to find out what the most typical foreign accent features in Russian native speakers of Danish as a foreign or second language are on the segmental level and in the word stress assignment; and 2) to find out whether a special introductory phonetic training (SIPT) anticipating the main language course can mitigate the degree of a global foreign accent in late native Russian learners of Danish.

In order to reach these goals, I formulated predictions about eventual typical features of the Russian accent in Danish applying the method of contrastive analysis (Archibald, 1998; Lado, 1957; Whitman, 1970) of the Russian and Danish phonemic inventories, based on the distinctive features phonological theory (Chomsky and Halle, 1968), and compared the peculiarities of word stress assignment in Danish and Russian. The formulated hypotheses were then tested by means of a case-study method, namely an error analysis of recorded reading samples of two word lists (one with vowel and consonant targets (151 target words) and the other one with diphthongs and word stress targets (51 target words)) read by 18 adult subjects. Half of the subjects have studied Danish as a second language at Danish language schools and did not have any SIPT (the D-group); and half of the subjects have studied Danish as a foreign language at Moscow State Linguistic University and had SIPT (the R-group). All the subjects speak Russian as their L1 and have a high command of Danish. I transcribed the recorded samples and systematized all the errors separately for the D-and R-groups.

The error analysis substantiated my theoretical assumptions based on the theory of equivalence classification (Flege, 1987), Speech Learning Model (Flege, 1987) and the theory of spelling interference (Miglio & Fukazaw, 2006; Ehri & Wilce 1980) and I have verified the hypotheses about the following typical features of the Russian accent in the studied aspects:

- qualitative reduction of [a̟] to [ɐ]* or [ə]*; [ɛ] to [ə]*; [ä] to [ɐ]* according to the degrees of reduction typical of the allophones of Russian /a/ and /ɛ/;
- fewer quality distinctive properties of the back vowels and [i] vs. [e̟];
- shortening of long vowels (however, the latter depends on the type of the instruction learners receive; in the current study those subjects who had SIPT with a focus on the distinction between long and short vowels performed better in the reading task for the long targets);
- consonantization of non-syllabic elements [w] and [e̯] in the Danish diphthongs as [v]* and [r]*/[ɻ]* respectively;
- monophthongization of diphthongs, especially [e̯]-diphthongs;
- disaspiration of [b̥ʰ], [g̊ʰ] and [d̥͡s];
- voicing of segments [b̥], [d̥], [s] and [g̊] after a vowel;
- dentalization of Danish /d/, /s/, /t/ /n/;
- double primary stress is typically either ignored or set in a word with two primary stresses as if there were a secondary and main stress in this word;

- secondary word stress is often ignored in non-compound words, and in compounds with more than two stems Russian native speakers tend to "save" the primary stress for the last stem in the word.

Additionally, other typical features, not predicted in the contrastive study, were discovered empirically as the results of the error analysis:

- front labialized [ø̟] is often mispronounced as [y]*, especially under the influence of the spelling interference;
- sounds [œ̟] and [ɶ̟] are generically susceptible to *narrowing* in terms of height to such qualities as [ø]*, [ɞ]*, [ʏ]* and [ɵ]* as well as a tongue retraction;
- the nucleus of the diphthong may be exposed to the same qualitative errors as the corresponding vowel quality;
- prefixed words may have a broken word stress.

The hypotheses about the lengthening of short vowels and about the velarization of /l/ were falsified. Moreover, my prediction about a more consonant-like pronunciation of [ʁ̞] could neither be verified, but is sooner falsified, since the main accent feature for [ʁ̞] was its omission rather than [ʁ̟]-like production. Finally, one of my hypotheses was that Russian natives would palatalize /b, d, g/ especially before Danish front /i/, /ɛ/, /y/, /e/. The error analysis showed that this assumption was right for /g/, but I should admit that also sonorant segments, voiced [v] and voiceless [h] may be exposed to the palatalization. The reading task could not reveal characteristics of the pronunciation of [ə], which as was argued, should be studied not in isolated words, but rather in a spontaneous speech task. Generally, the current study claims that the discovered features are at least true under the conditions of the reading task. Further research is needed to test them in a spontaneous speech task.

As far as the second goal is concerned, it was reached by means of global accent ratings of the readings of a small text by 27 Russian natives (12 from the D-group and 15 from the R-group) and 4 Danish native controls. The global accent ratings were done by four native raters with linguistic backgrounds and four native raters without any linguistic background, according to a 5-point scale. The difference in the mean scores of the two groups (1.80 for the D-group and 2.17 for the R-group) was proved to be statistically significant as the result of a T-test run on statistical significance. It was calculated that considering the experiment conditions and taking into account the linguistic portraits of the two target groups, the probability that SIPT (focused both on the segmental and prosodic aspects of the Danish pronunciation) mitigates a foreign accent in Russian native speakers of Danish, is 94.7%.

It should be noted that the results of the thesis have a practical significance for both teachers of Danish working with Russian natives, and for the Russian native learners of Danish, as a set of guidelines about weak points of the Russian natives' pronunciation in Danish. It can serve a basis for the development of a pronunciation course focused on the segmental level and word stress assignment, and can be considered as a recommendation to introduce SIPT for beginners with Danish as their L2 and Russian as L1.

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1. Introduction

1.1. Problem overview

The topic of this master thesis is *"Russian accent in Russian native speakers of Danish as a second and foreign language".* The point of departure for the choice of the topic has been a difficulty, which as my experience of a teacher of Danish a second language shows, the majority of late Russian native learners of Danish as both second and foreign language have to face while mastering the Danish pronunciation. The latter in most cases is a much more time- and effort demanding aspect of Danish studies, compared to the vocabulary and grammar learning or reaching a general fluency of speech in Danish. The most illustrative example, I have witnessed myself, of what this unsolved difficulty may result in, is a situation when a late learner has spent years on learning Danish, but when he or she starts communicating with a Dane, they fail to understand each other. One reason for that is the late learner's heavy accent. Another one is that the Danes are in general less accustomed to hear a foreign variant of their native language, and as a consequence have less "practice" in distinguishing a foreign variant of Danish. Such an experience of not being-understood may develop into a psycholinguistic barrier in future in the case of Danish end-learners or put an obstacle on the studying process in the case of beginners by forming a negative perception of the Danish language.

Numerous research experiments, which I discuss in sections 2.1., 2.2., have addressed the fundamental idea that phonologically the foreign accent basis lies on the word segmental level, i.e. in the major dissimilarities between two phonemic inventories, namely the articulatory properties of the L1 vs. L2 vowels and consonants. Among major segmental dissimilarities between Russian and Danish are the absence in Russian of the distinction long-vs.-short vowels, absence of the aspiration for the stops /p/, /t/, /k/; absence in Danish of the consonant categories voiced vs. voiceless and lateralized vs. non-lateralized inherent to Russian consonants, as well as a smaller range of vowels in Russian, compared to Danish.

These are only few examples of the differences on the segmental level. No native-like pronunciation, according to Birdsong (2007: 117), is possible on the global sentence level, if an articulatory word level is affected by a foreign accent. However, no foreign accent-free pronunciation can be realized only with an accurate articulation on the segmental level, since a native-like pronunciation is characterized by a whole set of features including prosody and syllable structure. I argue however, that the core of the foreign accent is on the segmental level.

One of the methodological principles of accent studies most widely applied during the recent decades (Flege, 2002; Best et al. 2001; Flege et al. 1995; Flege 1981a; Ingram & Park, 1998; McAllister et al., 2002; Missaglia, 1999) is the one, which implies testing narrow segmental and suprasegmental foreign accent features proceeding from more abstract predictions about difficulties which non-native speakers may have, as the result of filtering the sound and prosody systems of their second language (L2) through their first language (L1) corresponding systems. No previous research has addressed the phenomenon of Russian accent in Danish, neither on the abstract level of basic dissimilarities, nor on a more precise level of acoustic or prosodic features of the Russian accent. Therefore, this research paper is to tackle the very fundamental aspects of the Russian accent in Danish. I shall address the issue of the Russian accent by first making more abstract predictions about how dissimilarities and similarities between Danish and Russian phonemic inventories may be reflected in the Russian accent, and then shall test my predictions empirically.

The current project will be the first one in the field of accent studies examining the combination Russian (L1 in this study) - Danish (L2 in this study). It may also have significance for future studies in the field of foreign accent in Danish learners with other Slavonic languages as their L1s. Moreover, the results of this thesis can make a considerable contribution to the methodology of the Danish language teaching by finding the weak sides of the Russian natives' articulation in Danish, which could be used as a first-priority aspect in the phonetic training.

1.2. Goals of the project

A lot of research work has been done in the field of studying foreign accents from the point of view of factors that influence the degree of a foreign accent, such as the age of L2 learning, nature of L2 phonetic input, length of residence in an L2-speaking country, gender and motivation, type of language formal instruction, and amount of native language use (Piske et al., 2001). These factors can be referred to as common linguistic and extra-linguistic ones, very often interrelated with sociolinguistic conditions, and that are of a more general character. Such an approach to accent studies seems to be reasonable, but addresses the questions: "Why do people speak with accent? What could been done to give next generations a chance to minimize the accent?"

The main goal of the current project, however, is to answer the following questions:

1) What are the most typical accent features in Russian native speakers with Danish as a foreign and second language on the segmental level and in the word stress assignment?

2) Can a special introductory phonetic training anticipating the main language course mitigate the degree of a global foreign accent[1] *in late native Russian learners of Danish?*

In order to answer these two questions I shall resolve the two tasks.

1) Describe major phonological features of the Russian accent in Danish on the segmental level (pronunciation of vowels and consonants), and on the segmental level - accent properties connected with the assignment of the word stress.
2) Analyze a global accent degree in two different groups of subjects: 1) in those who have received a special introductory phonetic training before their main language course and have studied Danish as a foreign language in Russia; and 2) in those who have been taught Danish pronunciation as an integrated part of their language course and studied Danish as a second language in Denmark. I shall further in section 2.3. discuss my methodological decision to examine these two groups and explain why in the current project these two groups are considered initially equal in terms of the foreign accent factors.

2. Foreign accent as a research issue

2.1. Foreign accent, interference or transfer?

Before examining methodological issues of the current project, it seems natural to define basic terminological conventions regarding the term "accent" as the object of our primary research. The term "accent" or alternatively "foreign accent" in the context of second language acquisition and teaching theories means a set of phonological characteristics of a non-native pronunciation. In a broad sense, not in the meaning "…property of a syllable which makes it stand out in an utterance relative to its neighboring syllables…" in various domains: word accent (also word stress or lexical stress), phrase stress or sentence accent (http://www.britannica.com/EBchecked/topic/2866/accent), accent is "the cumulative auditory effect of those features of pronunciation which identify where a person is from regionally or socially" (Crystal 2003: 3). In our case, we shall deal with the regional accent, namely the Russian one as a set of phonological properties that make Danish speech sound

[1] "The degree to which an L2 speaker's productions are perceived to differ from those of a native speaker" (Riney et al. 2000: 713).

Russian-like due to the L1 (Russian) pronunciation habits both, on the level articulation, acoustics and prosody.

A foreign accent is also often discussed in connection with such phenomena as language transfer or language interference. The language transfer is usually defined as "the influence of a person's first language on the language being acquired." (Crystal 2003: 471). The language transfer is a more general notion compared to a foreign accent and usually stands for applying rules and knowledge of the L1 grammar, vocabulary, spelling or even punctuation in the L2. As a rule, a language transfer takes place as the result of insufficient knowledge of an L2, absence of a native-like command of an L2, or merely lack of authentic input. An example could be for instance a situation when the L1 syntactic system dominates over that of the L2, and an L2 learner tends to apply syntactic patterns untypical of the L2, which can lead to a non-native syntax and even semantic errors. In this case, the transfer of the L1 elements and structures will have a negative nature, because the influence of the L1 will lead to major or minor violations of the L2 norms or usage.

A notion similar to the negative transfer is a linguistic interference. Grosjean (1992) distinguishes between a static and dynamic interference. The static interference "describes the relatively permanent influence of one of the bilingual's languages on the other" (Malmkjær 2001: 69). According to Grosjean (1992), the common areas of static interference are accent, intonation and the pronunciations of individual sounds, such as a constant devoicing of final voiced English constants by Russian natives. The dynamic interference usually implies a temporarily transferred feature, only occasionally both in a written and spoken language.

The linguistic interference is most often mentioned in connection with the interlanguage theory, best presented by Larry Selinker (1992). An interlanguage is a transitional stage in the L2 learning, when the learners an L2, according to Selinker (1996: 97) "produce structures that exist neither in their first language, nor in the language they are learning and which (it seems) no native speaker of any language ever produces". It is possible to assume that the interlanguage structures also imply pronunciation patterns, characterized by mixed properties of the L1 and the L2, due to the fact that learners process and percept the L2 system through his or her solid and well-established L1 system, which puts an obstacle on the way to a native-like pronunciation in his or her L2.

As was mentioned above, the language transfer often has a negative effect on an L2 learner's linguistic performance. However, the language transfer can also have a positive effect through borrowings, for instance. Such a transfer can undoubtedly help a learner in the comprehension and production in his or her L2.

As we can see, the phonological transfer may be defined as applying the L1 pronunciation habits in the L2, in other words, the process of bringing L1 phonological features into the L2. Compared to a foreign accent, the phonological transfer, especially in its negative realization is an inevitable process in the L2 learning, rather than a result, while a foreign accent is one of its areas of realization resulting in a set of end-point features inherent to this or that phonological transfer as a process.

Since my project is aimed at figuring out what the main peculiarities of the Russian speech in Danish on the above mentioned levels are, I shall further use the term "foreign accent", not transfer or interference, and for the methodological convenience shall figuratively consider the Russian accent as a separate "variant of foreign Danish" with specific properties. I shall further also use the term global foreign accent in the meaning of "the degree to which a L2 speaker's productions are perceived to differ from those of a native speaker" (Riney et al. 2000: 713).

2.2. Theoretical framework

Though this project is the first one regarding Russian accent in Danish, it is of course not the first one in the field of foreign accent studies in general. Therefore, the current investigation will rely on many of the recent studies in the field of foreign accent research, phonological theory and theory of the second language phonology.

2.2.1. Distinctive features phonological theory

Since my project addresses a foreign accent as a research issue, it implies that I deal with two phonological systems. Therefore, I shall further - particularly in the contrastive study of the Danish and Russian phonological systems (see section 3) on the levels of segments and word stress - proceed from the distinctive feature phonological theory (Hall, 2001).

This theory was developed by Jakobson and his colleagues (1954) and further elaborated by Chomsky and Halle (1968) (http://clas.mq.edu.au/phonetics/phonology/features/index.html#distinctive). The theory implies "that speech sounds are composed of smaller abstract categories called distinctive features…" (Mielke & Hume 2006: 723). The term "distinctive features" as Mielke & Hume (2006: 723) put it, is applied in the sense of properties that "are used to define natural classes

of sounds, describe sound patterns, and to form contrasts". Both Chomsky and Halle, and Jakobson et al. (1954) argue that, distinctive features are defined in terms of some phonetic property (Hall 2001: 3). However, according to Hall (2001: 4), Chomsky and Halle (1968) take the point of view that the features are defined solely on articulatory terms, while Jakobsonian approach suggests that distinctive features have primarily acoustic definitions. The latter approach has been recently supported by, for example, Flemming (1995), Boersma (1998), Steriade (2000) who argue that acoustic and auditory form a basis of the distinctive features.

In my project, I support Chomsky and Halle (1968)'s approach to the definition of distinctive features and shall further proceed from the distinctive articulatory properties of the sounds in Russian and Danish (see section 3). I argue that the latter is more relevant for my foreign accent study, and I have two arguments for that.

Firstly, this thesis will have the largest practical significance for the late learners of Danish as a second and foreign language and their teachers if in connection with the analysis of typical accent features I proceed from the articulatory phonetic basis for distinctive features. This is reasonable from the practical point of view: in a classroom, or individually by Russian learners, the highlighted accent properties could be first and foremost tackled and eliminated or "improved" on an articulatory level, and only then on the level of acoustics. It is hard to imagine that a learner of a foreign or a second language would first operate with acoustic features of the L2 sounds – he or she would rather like to learn how to use his or her articulatory apparatus for the production of this or that L2 sound.

Secondly, in my thesis I set a particular focus on the production of sounds, i.e. how the Russian learners' foreign accent manifests itself in the language production, and examine what articulatory mistakes stand behind the accent. I believe that an accent study based on the distinctive acoustic features would be rather more relevant for the analysis of a foreign accent in terms of how accent correlates with learners' auditory perception of an L2, but the latter is not the topic of this thesis.

2.2.2. Previous studies on "accent factors"

One of the fundamental aspects in accent studies is the so-called *factors' issue*. As I have mentioned above, foreign accent factors are not the point of departure in our research. However, it is impossible to gather and analyze data without taking into consideration the linguistic backgrounds of the subjects, which are indirectly correlated with the factors'

determining the degree of accent. Therefore, below I shall give a short overview of the accent factors for the purpose of composing questionnaires for participants in the case-study as a part of the project.

The key-factors that have been in the focus of recent studies are the following:

- *age of L2 learning* (Bongaerts et al., 1997; Thompson, 1991; Lund, 2003; Munro et al., 1996), and in this connection the support (Patkowski, 1990) and counter-evidence (Flege, 1987) for the Critical period hypothesis (CPH)[2]; however, in general, the age-factor is rather the result of multiple factors that co-vary with the age at which an L2 learning began.
- *length of residence in an L2-speaking country* as a not necessarily significant factor (Flege, 1988; Thompson, 1991; Elliott, 1995; Moyer, 1999), and usually a less important predictor of the L2 accent degree (Flege & Fletcher, 1992), but the one, that can be a crucial contribution to the accent decrease at the initial stage of L2 learning (Riney & Flege, 1998);
- *motivation* such as a professional motivation, integrative motivation or a strength of concern for the L2 pronunciation accuracy which do not automatically lead to an accent-free pronunciation in the L2 (Piske et al., 2001);
- *innate aptitude for the oral mimicry* (Purcell & Suter, 1980) that may positively influence the decrease in accent and facilitate the L2 learning;
- *type of language formal instruction* (Piske et al., 2001) as an insignificant factor except for a special training in pronunciation for late learners (Bongaerts et al., 1997; Moyer, 1999), of which prosody-centered training (suprasegmental) was found to have improved pronunciation more efficiently than segmental training (Missaglia, 1999);
- *amount of native language use* as a minor, but still an important factor in decreasing a foreign accent (Flege et al., 1999b; Thompson, 1991).

[2] According to Bongaerts et at. (1995) the Critical period hypothesis was first proposed by Wilder Penfield and Lamar Roberts, and was popularized by Eric Lenneberg in 1967 with *Biological Foundations of Language.* According to Lenneberg (1967: 180), "there are maturational constraints on the time a first language can be acquired. First language acquisition relies on neuroplasticity. If language acquisition does not occur by puberty, some aspects of language can be learnt but full mastery cannot be achieved".
Thus, applying CPH to a SLA theory, we can say that if a child learns hie or her L2 before the critical age for L1, he or she will have a native command of the both; whereas the later in life L2 is studied, the fewer chances are that a L2's learner will have a native-like command of L2.

2.2.3. Speech Learning Model (SLM) and the theory of equivalence classification

Other research areas within accent studies of the last decades have been centered around the correlation between the degree of a foreign accent and speech production (Anderson-Hsieh et al., 1992), the degree of a foreign accent and comprehension in the L2 (Anderson-Hsieh, 1988) as well as between the degree of a foreign accent and perception in the L2 (Flege & MacKay, 2004; Baker et al., 2002). In all these research areas, the point of departure was dissimilarities between the L1 and L2 phonological systems (Baker et al., 2002; McAllister et al., 2002; Grønnum, 2008; Flege, 1981; Flege et al., 2003; Strange, 2007; etc.).

In this thesis, I have the same point of departure. I shall further - in the error analysis on the segmental level - refer to and apply one of the most frequently used models to explain an accent basis, called *Speech Learning Model (SLM)*, developed by James, E. Flege. "Focusing at the segmental level, SLM attributes foreign (non-native-like) accent to the learner's tendency to classify into a pre-existing phonic category an L2 sound that is acoustically similar to an L1 sound" (Birdsong 2007: 100). The core term of Flege's model is *"equivalence classification***"** and the idea behind this term is that

> …"equivalent" or "similar" sounds are difficult to acquire because a speaker perceives and classifies them as equivalent to those in the L1 and no new phonetic category is established, whereas "new" (dissimilar or different) sounds are easier to learn because the speaker perceives these differences and establishes new phonetic categories (Major 38: 2001).

In his SLM, Flege has gone further than the contrastive analysis hypothesis (CAH) (Lado, 1957). CAH stated that "cross-language differences result in learning difficulty…" and that "…that learners of an L2 will have more difficulty learning a new sound that has no equivalent in the L1 than in learning an L2 speech sound that resembles (but is not physically identical) an L1 sound" (Aoyama et al. 2004: 235).

Flege (1987) did not deny CAH, but he has claimed that it is only relevant at the initial stages of L2 learning. Since the current study addresses the issue of accent in advanced learners, I shall apply contrastive analysis (Archibald, 1998; Lado, 1957; Whitman, 1970) as a point of departure but in in the error analysis refer to Flege's SLM.

Flege (1995) suggests that in the second language learning both at the level of perception and production, L1 sounds phonetically dissimilar to L2 sounds will be learned and perceived with more accuracy in the long-term of L2 learning, in advanced learners. At initial stages, a L2 learner may be misled by a "temptation" to ignore accuracy in production and perception of L2 sounds, which are most similar to those of his or her L1. Psycholinguistically, this may be caused by a L2 learner's strive to speak L2 fluently, resulting in ignoring very minor dissimilarities of the most-similar sounds. Additionally, similar sounds are much more difficult to be phonologically processed in search of acoustic and articulation differences because of the established and automatized pronunciation and perception habits developed for the L1 phonological system.

According to Flege (1995), similar segments are filtered through the phonetic categories of the L1 sound inventory, and "…several different L1 speech sounds might be used as substitutes…" (Aoyama et al. 2004: 245), compared to the dissimilar or non-existing-ones in the L1, for which a new phonetic category will be created during a second language learning.

I used Venn diagrams to depict the idea of the accuracy progress in the pronunciation of similar and dissimilar sounds according to SLM in the following way: see **Figure 1**.

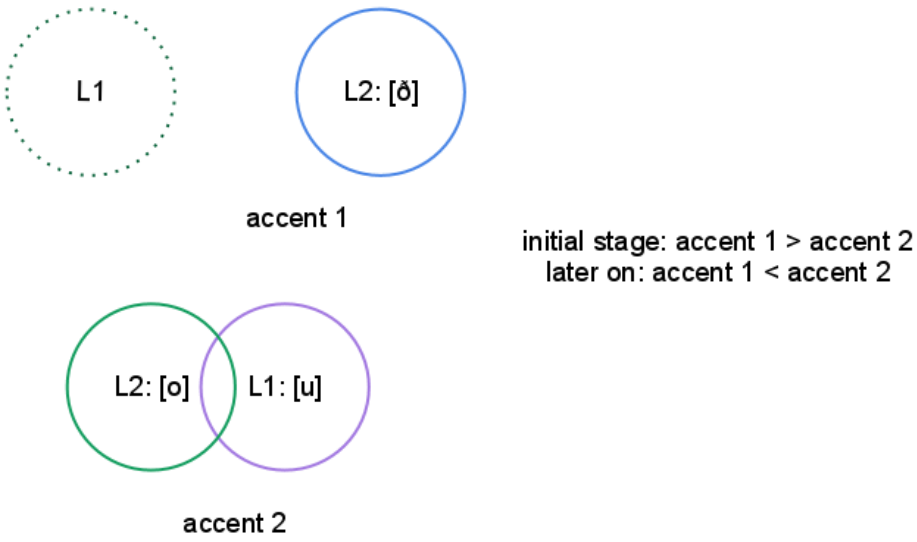


Figure 1. Accuracy progress in the pronunciation of similar and dissimilar sounds according to SLM

Let us illustrate SLM with an example of Russian and Danish. In the case of *accent 1* let us take, for instance, Danish /ð/ as in ***gade, hedde, bide***, which does not exist in Russian, neither as a separate phoneme nor as an allophone. The articulation of this sound is certainly a challenge for a native Russian, since it does not admit any "equivalence classification", and when it is pronounced for the first time, it resembles something between /l/ and dental-alveolar /d/. In the case of *accent 2*, let us take Danish vowel phoneme /o/ as in ***bopæl, olie, god.*** The latter one resembles a sound between Russian /o/ and /u/, but usually Russian natives pronounce it as the one closer to the Danish /u/, i.e. as a more closed sound. The accuracy of articulation in the case of this Danish segment is not a goal of an utmost importance for a Russian, since in most cases a context can "compensate" the missing phonemic distinction.

However, this negligence as the result of a 99% -"equivalence classification" is exactly what makes the accented articulation of the Danish sound plausible. Thus, *accent 1* and *accent 2* have completely different "origins", and during the initial stage of Danish acquisition a Russian speaker will be weaker at pronouncing the challenging /ð/, rather than /o/, but gradually as mastering the peculiarities of /ð/'s articulation, on the "tabula rasa", his or her accuracy of /o/ will be lacking behind, and will take much more time to become similar to the native-like pronunciation.

Though numerous studies of the last decades carried out by Flege himself (1987, 1995, 1999, 2002) and other researchers (Best, 1995; Best et al., 2001; Ingram & Park, 1998; etc.) support the idea of a greater achievement for dissimilar sounds, especially in advanced learners. There are studies, which cast doubt on SLM. For example, Kim (1994) found "that both advanced and beginning speakers of Korean learners of English performed better for the similar sounds" (Major 2001: 39). Earlier, Bohn & Flege (1992) in their study of the production of new and similar vowels by adult German learners of English showed that some of the speakers performed better with the similar sounds.

In this connection, Major (Major & Kim, 1996) proposed another model and suggested to speak not in terms of the difficulty of acquiring sounds, but rather in terms of the rate of acquisition. He claimed that, "dissimilar phenomena are acquired at faster rates than similar phenomena…" (Major 2001: 39). This laid the ground for the Similarity Differential Rate Hypothesis (SDRH) that has been supported by a series of studies: Chabanova, 1997; DeGaytan, 1997; Riney & Flege, 1998; Major & Kim, 1996). The latter was focused on Korean learners of English and showed that

"sound [j] was produced better by both beginning and advanced students (beginners did better) than the dissimilar sound [z], but comparing the beginning and advanced students it was clear that the rate of acquisition for the dissimilar sound was faster than for the similar sound…" (Major 2001: 39).

What is interesting is that even though SDRH and SLM look at accent from different angels, neither of them deny the fact that dissimilar sounds are an advantage for a L2 learner in the end, either in terms of forming new categorical properties (SLM) of the dissimilar sounds, or in terms of the rate of acquisition (SDRH). Both approaches give grounds for emphasizing the dissimilarities and similarities between the Russian and Danish segments. However, I shall further refer mainly to Flege's SLM and his theory of "equivalence classification". I believe that Flege's approach, substantiated by the above-mentioned studies, forms a more relevant theoretical basis for my project because

- I study a foreign accent in late advanced learners both in similar and dissimilar sounds, but do not compare the rate of acquisition of similar and dissimilar sounds in advanced and begging students;
- This thesis should describe accent features rather than investigating what sounds are acquired at a faster rate;
- Flege's theory of equivalence classification explains mental processes that stand behind the acquisition of the L2 phonemic inventory and the way new pronunciation habits develop in late advanced learners.

2.2.4. Theory of spelling interference

Another major theoretical point of departure for my accent description is the theory of *spelling interference* (Miglio & Fukazaw, 2006; Ehri & Wilce 1980) in L2 learners (here I apply the term "second language in the meaning a language learned after L1"). According to this theory pronunciation mistakes, and as a consequence a speech with a foreign accent" could not be generically ascribed to L1 interference, but more specifically to the spelling interference from the L1" (Miglio & Fukazawa 2006: 4145). Miglio & Fukazawa (2006) substantiated their idea empirically having made a research on American learners of Spanish. The two authors found out recurrent patterns in the subjects' pronunciation errors. These patterns were the result of the Spanish learners' word recognition on analogy in a word list reading task, when they had unconsciously associated the letters from the Latin alphabet,

used in Spanish to represent Spanish sounds, with English sound. That is to say, in the words pronounced with an accent, they processed the spelling as if it represented English sounds. Thus, a spelling interference is a complex "phenomenon whereby the spelling of the word…" in L2 "…triggers a correspondence between…" an L2 spelling symbol "…and the pronunciation of the same symbol in the native language…" (Miglio & Fukazawa 2006: 4145).

The reason why I consider this theoretical approach particularly relevant for my research is that firstly, learning Danish pronunciation through a written language, i.e. by using the principle from letter (symbol) - to sound is a very common practice among Danish learners with Russian as L1, as my teaching experience shows. In other words, Russian learners tend to pronounce Danish words in the way closest to the spelling, assumedly due to a closer letter-to-sound correspondence in the Russian morphophonemic spelling system. Secondly, this learning through a written language creates a basis for a spelling interference situation. The latter takes place when a Danish spelling symbol triggers a Russian sound because 1) this sound in Russian is represented with the same letter (e.g. Russian and Danish letters *a, o, y, k*); or 2) because the Danish Latin spelling symbol triggers the "corresponding" Cyrillic symbol, and as a result the Danish sound is pronounced in a Russian-like manner (e.g. in the case of Danish *p, t, d, g, h* etc.). I shall further in 5.3. refer to the *spelling interference theory* in order to explain the origin of some Russian accent features discussed.

2.3. Hypotheses and methodological framework

As was mentioned the aim of this thesis is twofold: 1) to describe the typical features of the Russian foreign accent in Russian natives with Danish as a foreign and second language; 2) to find out whether a special phonetic training anticipating the main language course plays an accent-mitigating role. To do that, I have formulated a series of preliminary hypotheses that I am going to proceed from. They are the following.

1) *Russian accent in Danish would have the following typical features on the segmental level and in the word stress assignment:*
    - excessive and unnecessary qualitative reduction of unstressed vowels;
    - shortening of the long Danish vowels and lengthening of the short ones;
    - fewer quality distinctive properties of the back vowels and front /i/ and /e/;
    - monophthongization of diphthongs;

- consonantization of the glide in diphthongs;
- disaspiration of /p/, /t/, k/;
- velarization of /l/;
- voicing of non-aspirated consonants /b/, /d/, /g/, also of the intervocalic [s].
- palatalization of /b/, /d/, /g/ especially before Danish front /i/, /ø/, /ɛ/, /y/ and /e/.
- dentalization of /d/, /s/, /t/ and /n/;
- /r/-assimilation to a thrilling /r/; "consonantization" of [ɐ̯];
- [t͡s]-overtone in the Danish /t/[3].
- avoidance of the secondary word stress;
- replacement of one of the double word stresses by a secondary one.

2) *Russian native learners of Danish as a foreign language, exposed to a special introductory phonetic training (SIPT) before the main language course, would have a lower degree of the global accent than Russian native learners of Danish as a second language, who studied pronunciation as an integrated part of the major language instruction and did not have any SIPT before the main language course.*

To narrow and precise the hypotheses for the segmental level and word stress assignment I need a preliminary theoretical study in order to examine dissimilarities and similarities between the two phonological inventories in terms of segmental characteristics and word stress features. Methodologically, I shall carry out this study in the form of a traditional inter-linguistic contrastive analysis (CA) (Archibald, 1998; Lado, 1957; Whitman, 1970). The theoretical CA should result in more precise assumptions and predictions about accent features, which then will be either verified or falsified empirically by means of a case-study method - namely the error analysis of the recorded samples of word lists read by Russian learners of Danish as a foreign and second language. Moreover, the eventual "stumbling blocks" for Russian learners, highlighted in the CA will help to make methodologically more solid word lists for the reading task. I shall study the case of adult learners of Danish, who started learning Danish as a second or a foreign language after age 17. There will be two groups of subjects.

Group 1 (further referred to as "R-group"): Russian native speakers, who are studying Danish as their minor foreign language at Moscow State Linguistic University, and

[3] See section 3.3.

have an advanced command of the language. This group received SIPT before the main curriculum, in the first semester.

Group 2 (further referred to as "D-group"): Russian native speakers, who studied or are still studying Danish as a second language at language schools and centers in Denmark. They have an advanced command of Danish. In the case of this group of subjects, the pronunciation training has been integrated in the module teaching, but was not taught as a separate introduction course prior to the main language course[4].

In order to substantiate or falsify my hypothesis about the accent mitigating role of SIPT, I methodologically *imply* that the R-group would run the same chances to be rated approximately in the same way as the D-group. On the one hand, the longer mean length of the language instruction in the case of the participants with the special introductory phonetic training would compensate for the fact that they have not lived in a language environment where Danish is an official (and a majority language), as opposed to the other group with Danish as a second language. On the other hand, the subjects with Danish as a second language by default would assumedly have more chances to put their language skills in language practice with native speakers mitigate the Russian accent by a larger native input exposure and an active use of Danish outside language schools. The latter should compensate for their not having SIPT. Therefore, I initially *imply* the two groups to be equal. However, if the R-group receives higher mean scores, this would assumedly mean that SIPT was a decisive factor, but this will be tested in the case study. I shall further in section 4.3. present the subjects of both groups and their linguistic portraits in a more detailed way.

The case study will consist of two major stages, which correspond to the goals of the project:

Stage 1: Error analysis of the recorded samples of word lists read aloud by subjects from both groups. Subjects will be offered to read two lists of isolated Danish words, covering the full Danish phonemic inventory (see sections 4.1.1., 4.1.2. for a more detailed account on preparing the reading materials). The recorded samples of word lists will be then transcribed with the help of the International Phonetic Alphabet (further IPA), and the mispronounced sounds will be exposed to the error analysis in order to systematize errors and figure out the typical features of the Russian accent in Danish in the target case-study groups.

[4] Only few language schools in Denmark offer special pronunciation training prior to the first study module, and such courses are usually designed for students with L1s typologically very different from Danish, such as Chinese, for instance.

Stage 2: Rating by Danish native expert and non-expert speakers of the Russian subjects' global accent degree by means of assessing the recorded readings of a small text, according to a 5-point rating scale. The obtained ratings will be then averaged separately for each group in order to find out whether SIPT plays an accent-mitigating role. See sections 6.1., 6.2. for more details on the rating procedure.

For methodological reasons, Danish raters will be from two groups: those who do not have any special linguistic background - who did not major/are not majoring in Danish or any foreign languages and who do not have any language-teaching experience ("non-experts"); and those who major/majored in Danish or foreign languages, or have a language-teaching experience ("experts"). My decision to choose raters with these two different backgrounds was based on the previous research, mainly on Flege's (1984) and Thompson's (1991) studies. These studies showed that linguistically "inexperienced raters are more stringent in rating the degree of accent" (Thompsons 1991: 198). In order to make the global accent rating procedure as objective as possible, I decided to choose both expert and non-expert raters.

Methodologically, I decided to choose the reading tasks for data collection for both stage 1 and stage 2, rather than spontaneous speech tasks. I have a series of arguments for that. Firstly, by preparing lists of isolated words I could cover all the main allophones of the Danish language. Spontaneous speech samples could not ensure that in all the samples, all the target sounds would occur at least once. Secondly, the reading task allowed us to choose target words in a way that target sounds would occur in the most illustrative positions from the point of view of a potential accent basis for these sounds according to the Russian phonological properties. Thirdly, a word lists reading task ensures that all the subjects are in equal conditions and would have the same level of task difficulty, whereas in the case of a spontaneous speech task subjects could on purpose avoid using words containing sounds, which are particularly difficult for them. Finally, the same reading materials for all subjects give a chance to compare the results across the two target groups (those with SIPT and without it).

2.4. Notation conventions for the current project

In the theoretical contrastive analysis, I shall apply the modern Russian literary language as a reference example for the Russian language, and the pronunciation of the "standard" Copenhagen dialect as a reference example for the Danish language. The Russian

literary language is considered (Cubberley, 2002) today a standard variant of Russian spoken by educated Russians across the Russian Federation. It is the official language of the Russian government, radio and television. All the subjects participating in our case study are all speakers of the modern Russian literary language.

All the Russian examples are incorporated in the paper by means of transliteration in the Latin alphabet. It should be noted that we use the modern conventionalized rules of Cyrillic-Latin transliteration designed by Yermolovich (2005).

The phonetic transcriptions of the recorded word lists samples, as well as all the examples given in the text of the thesis will be given in accordance with the IPA (Handbook of the International Phonetic Association, 1999). I decided to use the IPA both for Russian and Danish in order to unify the transcription notation systems under one convention. Moreover, the IPA is more efficient in depicting the sounds of the Russian variant of Danish where phonemes and their allophones existing neither in Danish nor in Russian will definitely turn up. In this case the number of transcription signs of, for instance, the Dania Phonetic Alphabet (further DPA) would not be able to reflect all the non-native like variants and "new-generated" sounds (a learner's interlanguage sounds) inherent to the pronunciation of Danish words. Therefore, the IPA with its larger inventory seems to be a more methodologically reasonable solution, and a tool allowing a more precise transcription.

However, since most of the Danish dictionaries apply the Dania Phonetic Alphabet (further DPA), the correspondence between the IPA and Dania is presented in Appendix 18. Other notational conventions used in the project are the following:

Russian examples: *italics, non-bold type*

Danish examples: ***italics, bold type.***

English translation: non-italics, non-bold type.

3. Contrastive study of the Danish and Russian phonological systems on the segmental level and the level of word stress

3.1. Vowels

3.1.1. Danish vs. Russian vowels: distinctive features of the two phonemic inventories

In this section, I investigate what the differences between the two vowels inventories are on the segmental level, mainly what the distinctive features of the vowel phonemes in both languages are. By the term *distinctive features*, I shall further imply the definition given in section 2.2.1. (I examine only articulatory features, as was mention in 2.2.1). Additionally, since this study addresses the Danish pronunciation in late Russian native learners, I consider it relevant to supplement the articulation distinctive features (as a basis for comparison) firstly, with the length - as a phonologically meaningful quantitative feature of Danish vowels. Secondly, I shall also discuss the weakening of vowels (qualitative reductions in the unstressed syllables) as a vowel feature highly relevant for the Russian accent in Danish, which will be addressed in section 3.1.2.

In Russian, there is a crucial interaction between consonant and vowel segments. The articulation properties of the latter are in most cases dependent on the quality of a following or preceding consonant, for example, on whether this consonant is hard or palatalized. Moreover, there is a major influence of the word stress on the quality of the phoneme. The former and the latter characteristics result in a rich allophony. Therefore, when discussing Russian vowel phonemes, linguists (Avanesov, 1956; Bondarko, 1977) cannot ignore the allophony, and as a rule, the overview of the Russian vowel phonemic inventory is focused on the presentation of the positional variants of vowel phonemes and description of phonemic rows.

The aim of our contrastive study is not to describe how the positional principle works for the allophonization in Russian and Danish, but rather to highlight distinctive articulation properties of the Russian vowels compared to the Danish ones.

However, I shall further sometimes refer to the Russian vowel allophony, because the Russian positional principle may have an effect on the accent in Danish. I shall mention two main positional domains of the Russian phonemes (not taking into account the isolated position) and their subtypes:

A. <u>STRONG POSITION:</u>

stressed vowels at the beginning of the word before a hard consonant;

stressed vowels at the beginning of the word before a palatalized consonant;
stressed vowels after a hard consonant before a palatalized consonant;
stressed vowels after a hard consonant not before a palatalized consonant;
stressed vowels after a palatalized consonant before a palatalized consonant;
stressed vowels after a palatalized consonant not before a palatalized consonant;

B. <u>WEAK POSITION</u> (reduced)

unstressed vowels in the first pre-stressed syllable;
unstressed vowels in the second pre-stressed syllable;
unstressed vowels in the first post-tonic syllable.

The positions A and B play a distinctive role in defining the allophonic properties of 5 Russian stressed distinctive vowel phonemes /a/, /ɛ/, / i/, /u/ and /o/. There are still discussions concerning the sound [ɨ]. Moscow linguistic school considers this sound to be the allophone of /i/ in the position after hard (non-palatalized) consonants, while St. Petersburg linguistic school regards them as two separate phonemes. In this thesis, I support the first point of view, because [i] and [ɨ] exist in complementary distribution and are never interchanged.

Regardless of the positional characteristics, these five strong stressed full phonemes /a/, /ɛ/, / i/, /u/ and /o/ have their distinctive contrastive articulation properties in respect to their place of articulation **(**see **Table 1)**:

- height (vertical dimension) of the body of the tongue in relation to the hard palate (close, mid and open);
- participation of the lips in their articulation (labialized/rounded, unlabialized/unrounded).

Phoneme	**Height**	**Backness**[5]	**Rounded-ness**	**Examples in IPA**
1. /i/	close	front	_	*osina* [ɐˈsʲ**i**nə] (an aspen)
2. **/u/**	close	back	+	*ruki* [ˈr**u**kʲɪ] (hands)
3. **/ɛ/**	open-mid	near-front	_	*belka* [ˈbʲ**e**lkə]

[5] Grey filed shows articulation properties, which are not phonemically distinctive.

				(a squirrel)
4. **/o/**	mid	back	+	*korobka* [kɐr**o**pkə] (a box)
5. /**a**/	open	mid/near-back	_	*gladky* [glaʈkʲ**ɪ**j] (smooth)

Table 1. Russian full vowels

In the discussion of Russian full vowel phonemes, it is only relevant to speak about full phonemes in relation to the stressed vowels. Such a feature can be ascribed to the influence of the word stress on the quality of the Russian vowels. What will distinguish allophones' reference to their phonemes, and therefore the meaning of the word on the articulatory level, is the labialization and height.

Let us take minimal pairs. In (1) the only meaningful distinction between mid /ɛ/ and mid /o/ is provided by labialization, where [e] in *sel* is an allophone of /ɛ/ after a palatalazied consonant, and [ɵ] is an allophone of /o/ after a palatalized consonant. In (2) the phonemic difference is preserved by the vowels' height – close /i/ and open /a/.

(1)	*sel* [sʲel] *sit* (past, pf, 3sing, male)	*syol* [sʲ**ɵ**l] rural settlements (neuter, pl., Gen.)
(2)	*tik* [tʲ**i**k] a tic (Nom., sing., male)	*tak* [tak] so

It is worth noting, that the height and labialization remain, according to Avanesov (103: 1956), fundamental and constitutive distinctive features of all the allophones of one phoneme, which make them belong to the same phoneme irrespective of the immediate distribution and phonological processes such as assimilation.

What is remarkable is that backness - the position of the tongue in relation to the back of the mouth (and in this connection division into front, central and back) - traditionally pointed out in the distinctive features theory as a property determining the vowel's quality - is not a constituent and distinctive articulation property of the Russian full vowel phonemes. It is a complimentary one, and, according to Avanesov (1956: 89), characterizes the quality of

an allophone rather than that of a phoneme. If we take, for example, the open /**a**/, the position of the tongue in relation to the back of the mouth is vague in an isolated position or at the beginning of a word. Since the body of the tongue is more or less flat, its articulation involves neither moving the body of the tongue forward nor stretching it backwards to the velum. Only in definite realizations, for example after hard velar /k/, /g/ as in *kartofel* [karˈt̪ofʲelʲ], (a potato), *gadat* [gɐˈd̪at̪ʲ] (to tell smb's fortune) the body of the tongue or mainly the back part of it stretches a little bit backwards to the velum. Another good example is the front /i/**.** When occurring after a hard vowel as in *bistro* [bɨs̪t̪rə] (quickly), *ryskat* [rɨs̪katʲ] (to prowl) it is realized as the mid allophone /ɨ/, and the same allophone can be more front after a dental consonant as in *dynya* [dɨ̟nʲə] (melon), or becomes more back and even diphnongized after a labial consonant plus [ɫ] *plyt* [pɫɨ̞tʲ] (to swim). Thus, it is possible to conclude that backness in Russian is inherent to allophones and depends on whether a vowel sound is followed and/or preceded by a consonant phoneme, and if so - on the qualities of the following and/or preceding consonants (hard/palatalized).

As far as such a phonological quantitative characteristic as length is concerned, it is not distinctive or contrastive in Russian. It only plays an emphatic role when a particular vowel is in the focus for the purpose of a more distinct pronunciation, during a syllable reading or in particular positions, as for instance, the case with the phoneme /a/ before /l/. The stressed vowels are usually slightly longer, but the latter is not a phonological feature in Russian and has nothing to do with the contrast long vs. short phonemes.

Compared to the Russian vowel phonemic inventory the Danish one is much more varied. This is probably a major first-sight distinction between the two systems. Russian with its five full phonemes (occurring in stressed positions) is lacking considerably behind in the size of the vowel phonemic inventory compared to Danish with 20 full phonemes (occurring in stressed syllables). The latter lays the foundation for a non-native-like pronunciation in the Russian learners.

What is common of two systems is that the place of articulation plays a contrastive and distinctive role in determining phonemic characteristics. As well as in Russian, the backness as a property of Danish vowels is a distinctive and contrastive quality of the allophones rather than phonemes. This quality is positionally determined and may slightly vary from an allophone to allophone, but not beyond the limits of the contrastive phonemic reference. I shall further refer to the traditional cardinal classification of the vowel phonemes with two distinctive articulatory phonemic contrastive features height and roundedness, just as I did with the Russian vowel phonemes. There is another approach to the articulatory classification

of vowels, first elaborated by Ladefoged (1971) and then widely used by, for instance, Basbøll (2005) for the classification of vowel "space" characteristics. It implies the division of phonemes into labial, palatal, velar, pharyngeal, approximant and front. Methodologically, I argue in favor of the traditional cardinal classification, which in our study can provide a common ground for comparison of the two inventories: namely because the traditional cardinal classification is much more frequently used in the Russian phonology (Avanesov 1956; Bondarko, 1977).

Let us now look at the Danish inventory of vowel phonemes, according to Grønnum (2005: 62) with our own examples. See **Table 2**.

It is worth noting that the length, as a contrastive property of Danish vowel phonemes, is considered by some linguists, such as Basbøll (2005) to be syllable-related and suprasegmental by nature in Danish. It is true that long Danish vowels occur typically in an open syllable, thus, to a certain extent, are syllable-related and syllable-determined, and sometimes even dependent on "morpho-syntactic conditions" (Grønnum 2005: 251). Therefore, the vowel length is prosodic (suprasegmental) by nature. However, it seems reasonable and relevant to consider this quantitative property of Danish phonemes to be relevant for the current segment-related contrastive study, and further set shortening of the Danish vowels in the focus of the error analysis. The first reason for that is that this vowel quantitative phonological characteristic does not exist in Russian. Therefore, it would be a particular challenge in pronunciation. And secondly, as my teaching experience shows, the vowel length (suprasegmental by nature) is most effectively assimilated by Russian learners when it is discussed as a "segmental" feature and trained in minimal pairs. Therefore, here the vowel length will be included in the error analysis along with the segmental properties of the vowels.

Vowel phoneme	Height	Backness[6]	Roundedness	Examples in IPA
1. /iː/	close	front	-	***pige*** [ˈb̥ʰ**i**ːə]
2. /i/	close	front	-	***ligge*** [ˈli**g̊**ə]
3. /eː/	close-mid	front	-	***alene*** [a̰ˈl**e̝**ːnə]
4. /e/	close-mid	front	-	***det*** [d̥**e̝**]
5. /ɛː/	close-mid	front	-	***næse*** [ˈn**e**ːsə]
6. /ɛ/	close-mid	front	-	***pædagog*** [b̥ʰ**e**d̥a̰ˈg̊oʊ̯ˀ]
7. /aː/	open-mid	front	-	***bade*** [ˈb̥**a̰**ːð̞ʸə̰]
8. /a/	open-mid	front	-	***mad*** [m**a̰**ð̞ʸ̰]
9. /yː/	close	front	+	***dyne*** [ˈd̥**y**ːnə]
10. /y/	close	front	+	***cykel*** [ˈs**y**g̊əl]
11. /øː/	close-mid	front	+	***købe*** [ˈg̊ʰ**ø̝**ːb̥ə]
12. /ø/	close-mid	front	+	***kysse*** [ˈg̊ʰ**ø̝**sə]
13. /œː/	open-mid	front	+	***gøre*** [ˈg̊**œ̝**ːʌ̰]
14. /œ/	open-mid	front	+	***høns*** [h**œ̝**ns]
15. /uː/	close	back	+	***bruge*** [ˈb̥ʁ**u**ːə]
16. /u/	close	back	+	***huske*** [h**u**sg̊ə]
17. /oː/	close-mid	back	+	***skole*** [ˈsg̊**o̝**ːlə]
18. /o/	close-mid	back	+	***olie*** [ˈ**o̝**ljə]
19. /ɔː/	open-mid	back	+	***dåse*** [ˈd̥**ɔ̝**ːsə]
20. /ɔ/	open-mid	back	+	***komme*** [ˈg̊ʰ**ʌ̰**mə]

Table 2. Danish short and long full vowel phonemes according to Grønnum (2005: 62)

Another syllable-related distinctive characteristic of Danish vowels is called *stød*. The latter is, according to Basbøll (2005: 83), "a syllabic prosody, a laryngealization – a kind of creaky voice…- often beginning somewhere near the middle of certain syllables…" Stød is lexically distinctive in Danish: e.g. ***aftale,*** vb. [ˈäwˌd̥s**ɛˀ**lə] (to agree) and ***aftale*** sb. [ˈäwˌd̥s**ɛː**lə] (an agreement). The general rule is that in order to receive stød a stressed syllable should have a long vowel or a short vowel plus a sonorant consonant, in other words should have a "stød-basis" (Basbøll 2005: 84).

Even though stød is a semantically meaningful phonological feature in Danish, it cannot be heard in all the geographical variants of Danish. According to Fischer (1992), it is

[6] Grey filed shows articulation properties, which are not phonemically distinctive.

possible to speak about a stød-border, which lies north of Rømø via Tønder to Haderslev and then from Fåborg northwards up to Præstø and farther to Bornholm (see **Figure 2**). To the south of this border stød cannot be heard at all, and to the north of the border, it exists, but not in all variants (Kirk 2008: 75).

Figure 2. Geografical occurence of stød in modern Danish according to Heger (1992: 125)

The ability or inability to produce stød as a prosodic and non-segment, but segment-related distinctive property of a syllable will not be taken into account in this thesis, neither theoretically, nor empirically for certain pragmatic reasons. Arguing idealistically, it is possible to assume that if the speech of the Danes without stød is considered by the Danes who produce stød to sound native-like, then other phonological features of the segmental and suprasegmental levels are more "significant" than stød in terms of assigning native-likeness. The latter however does not mean that it is all the same whether the learners of Danish acquire stød or not (Kirk 2008: 75). Moreover, in the context of Danish as a foreign or second language the acquisition of a native-like or at least regular production of stød is not a common practice, even in the learners of Danish with a high language command. As Henrichsen (2009) claims, "two specific aspects of Danish pronunciation are perceived by L2 learners as particularly hard to master, the stress assignment, and the stød"). I suggest to

assume that an advanced and intermediate learners are aware of this phonological feature, but in a real language use it turns out to be a secondary priority compared to the segment articulation. Thus, stød will not be in the pragmatic focus of my research.

Earlier in section 2.2.4., I spoke about the influence of the Danish written language on Danish acquisition by Russian learners. In Danish language schools (as my own teaching experience and internship show) and in Russia (according to the information from teachers of Danish as a foreign language at Moscow State Linguistic University, for instance[7]) the instruction in segments' pronunciation is usually letter-to-sound-related, and vowel qualities in this connection are presented and trained proceeding from their immediate phonetic distribution. Among these distribution factors are the following ones: 1) whether a vowel is preceded or followed by /r/; 2) whether the syllable is opened or not; 3) as well as more rarely on whether a vowel is followed by a particular consonant. Since the error analysis of the reading samples in the current study will address errors on the phonetic level, it seems relevant to supplement the above presented Danish vowel phonemic overview with the illustration of the Danish vowel allophony, according to (Grønnum 2001: 45), depending on the immediate phonetic distribution. Moreover, this allophony illustration reflects the pronunciation guidelines, which the learners of Danish usually receive. See **Table 3** for the Danish vowel allophony illustration. The vowel qualities with stød are not included in the allophony illustration.

phonemes	**allophonic manifestation**		
	before r	**after r**	**otherwise**
/iː/	[iː] ***svire***	[iː] ***prise***	[iː] ***mile***
/i/	[i] ***birk***	[i] ***ridt***	[i] ***mit***
/eː/	[e̝ː] ***mere***	[ɛː] ***kredse***	[e̝ː] ***mele***
/e/	[e̝] ***Per***	[ɛ] ***brik***	[e̝] ***midt***
/ɛː/	[ɛː] ***være***	[ɛː] **k*ræse*** [äː] before [ð̞ˀ] ***græde***	[eː] ***mæle***
/ɛ/	[ɛ] ***bær***	[a] ***bræk***	[e] ***mæt***
/aː/	[äː] ***vare***	[äː] ***rase***	[ɛː] ***male***
/a/	[ä] ***var***	[ä] ***brak***	[a̝] ***mat*** [ä] before labial and dorsal, e.g. ***lak, lam***
/yː/	[yː] ***fyre***	[yː] ***rype***	[yː] ***syne***
/y/	[y] ***dyrk***	[y] ***rytter***	[y] ***tyst***
/øː/	[ø̝ː] ***køre***	[œ̝ː] ***røbe***	[ø̝ː] ***føne***

[7] One of the basic course books on pronunciation applied at Moscow State Linguistic University is *Min udtale* by Søgaard (1999).

/ø/	[ø̟ː] ***mørne***	[œ̟] ***ryste*** [œ̟̈] before [j] ***drøj*** [œ̟̈] before [w] ***røv***	[ø̟] ***øst*** [œ̟̈] before [j] ***tøj*** [ø̟] before [w] ***øvrig***
/œː/	[œ̟ː] ***gøre***	----------	[œ̟ː] ***høne***
/œ/	[œ̟] ***gør***	[œ̟̈] ***grøn***	[œ̟] ***høns***
/uː/	[uː] ***kure***	[o̟ː] ***ruse***	[uː] ***mule***
/u/	[u] ***skurk***	[o̟] ***brusk***	[u] ***mut***
/oː/	[o̟ː] ***more***	[o̟ː] ***rose***	[o̟ː] ***mole***
/o/	before C [o̟] ***sort***	final [o̟] ***ro(ˈbot)*** before C [o̟̩] ***rust***	final [o̟] ***foto*** before C [o̟̩] ***ost***
/ɔː/	[ɔ̟ː] ***båre***	[ɔ̟ː] ***råbe***	[ɔ̟ː] ***måle***
/ɔ/	[ɔ̟] ***vor***	[ʌ̟̈] k***rop*** [ɔ̟] before [w] ***rov***	[ʌ̟̈] ***kop*** [ɔ̟] before [w] ***tov***

Table 3. The illustration of Danish vowel allophony according to (Grønnum 2001: 245) in IPA symbols

Proceeding from the contrastive overview of the articulatory distinctive features of the Russian and Danish vowel phonemic inventories, it possible to make the following conclusions about eventual "stumbling blocks" for the Russian learners.

- The Russian vowel phonemic inventory is considerably less rich than the Danish one that makes a first challenge for the Russian learners of Danish in terms of the acquisition of new phonemes and their allophones. See **Figure 3**.

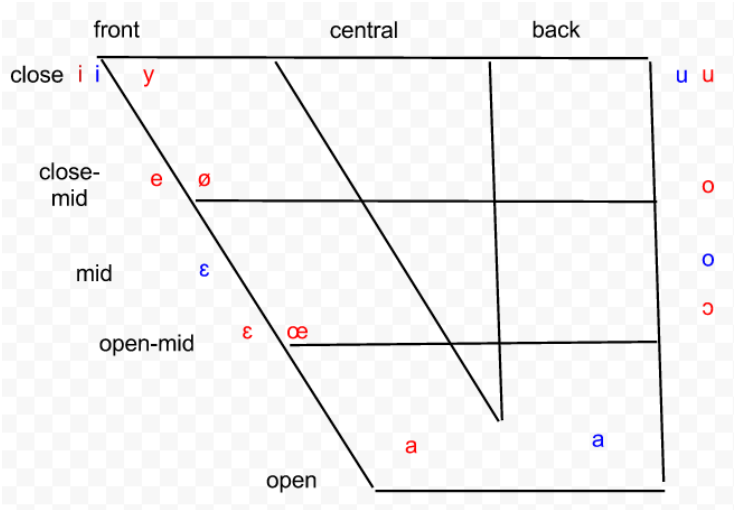


Figure 3. Russian (in blue) and Danish (in red) vowel phonemes: cardinal scheme

- It is possible to assume that according to SLM model, back close /u/ would be probably the most native-like of all phonemes, while the distinction between /i/ and

/e/ would be a challenge due to the fact that the main allophone [ɨ] of the Russian /i/ after a hard consonant will be most similar to the Danish /e/, even though [ɨ] is rather a central one.

- According to SLM, absolutely new phonemes /y/, /ø/, /œ/ and correspondingly their allophones will be produced in a more native-like manner, though with a less distinction between /y/-/ø/.
- As far as the Danish /a/ is concerned, its main allophone [ą] will be presumably mispronounced as a more closed allophone, while allophone [ɑ̈] will be more native-like.
- The most challengeable will be the distinctive articulation of back vowels /o/ and /ɔ/, and allophones of the latter.
- The major quantitative distinction is the absence in Russian of the contrastive opposition long vs. short vowels. As a result, the production of long vowel sounds will be a weaker point of a Russian native learner, while the short vowel sounds would be assumedly less difficult since they exist in Russian. It should be noted, that this "equivalence classification effect" in case of the long vowels according to Flege's SLM would be probably a vivid exception, since the principle "new and thus easier" will not assumedly function, as it would with new phonemes. The reason for that is the prosodic nature of the vowel length, and thus it requires much more training and adaption to the new pronunciation habits.

3.1.2. Russian vowel reduction degrees and their possible transfer into Danish

As was mentioned earlier, the Russian vowel phonemes are subject to a qualitative reduction in unstressed positions. I shall further use the term "reduction" in the sense "qualitatively weakened, but not omitted". This term should be distinguished from the term "reduction" often applied in Danish literature (Kirk 2008: 130) in the meaning that a sound (as it comes from Kirk's examples, both consonant and vowel sounds) is not pronounced, i.e. reduced to zero.

Russian full vowel phonemes are always subject to at least minor qualitative reduction if they are unstressed. In Danish, the weakening of unstressed vowels is to a certain extent different from that one in Russian. If in Russian reduction is more or less systematic, in Danish it is highly dependent on an individual's speech rate, pronunciation habits, emotions,

and stylistic features (formal/informal). Generally speaking, according to Grønnum (2001: 153)

> …vowels are pronounced more distinctly in stressed syllables…than in unstressed syllables… In Danish the difference in vowel quality (here the difference between stressed and unstressed vowels is meant) is not so marked, except for the fact that we have one vowel, [ə], which only occurs in unstressed syllables. However, in other languages… certain vowels are obviously centralized in unstressed syllables. (Grønnum 2001: 153).

Thus, as far as the qualitative reduction is concerned, in Danish it is more relevant to speak about it implying the reduction to neutral [ə] for instance in final positions as in ***sine*** [ˈsiːnə], ***snakke*** [ˈsnäg̊ə], ***hoppe*** [ˈhɔb̥ə]. In general, the neutral [ə] in final positions would be a typical characteristic of Danish and generally in final position there are very few phonological oppositions between vowels left. The qualitative reduction in pre-stressed syllables would preserve more of a vowel quality in terms of phonological oppositions, but still would be often dependent on an individual speech rate and style.

Grønnum's reference to the languages where unstressed vowels are centralized is particularly to the point for Russian. From the point of view of accent, the vowel reduction is a very significant characteristic of the Russian vowel system, and my hypothesis, which will be tested in the error analysis, is that the general mechanisms of vowel reduction may be more or less transferred into Danish. Therefore, below I shall give an overview of the vowel reduction mechanism in Russian.

The Russian vowel reduction, according to Bondarko (1977), may be of two different degrees: *Degree 1*, and *Degree 2*. *Degree 1* is typical of the first pre-tonic syllable and is usually considered to be less qualitatively severe. *Degree 2* occurs in all other unstressed syllables. Now let us see in **Table 4** how these two degrees of reduction work with particular phonemes and give examples.

Phoneme	**Stressed position**	**First pre-tonic syllable** (*Degree 1*)	**Other unstressed syllables** (*Degree 2*) a) second pre-tonic syllable; b) all post-tonic ones
/i/	***ig*˖*ry*** (games) [ˈɨgrɨ]	*ig*˖***ra*** (a game) [ɪgˈra] NB! after C /i/ can be reduced to [ɨ].	a) *pri*˖***ras***˖*tat* (to grow/increase, ipf.) [prʲɪrɐˈstatʲ]; b) *vy*˖***ra***˖*schi*˖*vat* (to cultivate, ipf.) [vɨrɐɛːɪvətʲ]
/u/	***ug***˖*ol* (a corner) [ˈugəl]	*u*˖***gly*** (corners) [ʊgˈlɨ] NB! after Cʲ /u/ can be reduced to [ʉ].	a) *u*˖*tram*˖***bo***˖*va*˖*ny* (to tamp: participle, past indf., passive) [ʊtrɐmˈbovənɨj]; b) *po*˖***mo***˖*gut* (will help: 3 pl., future indf.) [pɐˈmogʊt]
/ɛ/	***be***˖*gal* (ran: past, ipf, 3sing, male) [ˈbʲegəl]	*be*˖***zhat*** (to jog/to run, ipf.) [bɪˈʐatʲ]	a) *pe*˖*re*˖***me***˖*na* (a change/ a break) [pʲərʲɪˈmʲɛnə]; b) *o*˖***le***˖*nem* (a deer: sing, instrumental) [ɐlʲenʲəm]
/o/	*do*˖***ro***˖*ga* (a road) [dɐˈrogə]	*ko*˖***rabl*** (a ship) [kɐˈrablʲ] NB! after Cʲ /o/ can be reduced to [ɪ].	a) *do*˖*go*˖***vor*** (an agreement) [dəgɐˈvor]; b) ***ry***˖*boj* (fish, sing, instrumental **[**ˈrɨbəj**]**
/a/	*po*˖*da*˖*rok* (a gift) [pəˈdarək]	*o*˖*da*˖***ryen***˖*y* (gifted/talented) [ədɐˈrʲonɨj] NB! after Cʲ /a/ can be reduced to [ɪ]. e.g.	a) *pa*˖*ra*˖***lel*** (a parallel) [pərɐˈlʲelʲ] b) *vo*˖***ro***˖*bush*˖*ka* (a sparrow, sing. diminuitive) [vɐˈrobʊshkə]

Table 4. The degrees of vowel reduction in Russian

As is seen from **Table 4**, *Degree 1* and *Degree 2* reductions in the case of phonemes /i/ and /u/ are slightly centralized compared to the stressed /i/, /u/. The Russian /ɛ/ in *Degree 1* reduction becomes more front and more closed and may only have allophonic variants [ɪ] after Cʲ or [ɨ] after C. In *Degree 2* reduction, /ɛ/ becomes somewhat similar to the Danish

neutral [ə]. However, the latter is more closed, whereas the Russian is more open. What is remarkable about /o/ and /a/ is that they merge into [ɐ] in *Degree 1* reduction or [ə] in *Degree 2* reduction. Another important point is that in a weak position only close and mid vowel are distinguished.

The question is what both degrees of reduction mean for the Danish pronunciation. Firstly, if Russian the vowel reduction mechanism is transferred into Danish, mostly susceptible to the reduction of height will be Danish open unstressed phonemes /a/, /ɔ/ and mid /ɛ/ and their corresponding allophones both in the post-tonic and pre-tonic positions. Since the Russian mid "merged" phoneme /ɐ/ of the first pre-tonic is more closed than these three Danish vowel phonemes, the principle "do not forget to open your mouth wider" will be a prevailing one in the correction of Russian native learners, because the due height of these three Danish vowels will not be probably realized in articulation.

As for the Danish /o/, I assume that it would be in a more advantageous position compared to /a/, and /ɔ/, because it is initially more closed than the Russian /o/, and if reduced in height will be even more native-like. However, the latter is not claimed but only hypothetically suggested and will be studied as a part of error analysis. The weakening of the vowels will be further considered as an important factor in choosing target Danish words for the reading task. For more details on the reading materials and the principle of target word selection, see sections 4.1.1., 4.1.2.

3.2. Diphthongs

According to Jones & Ward (2011), Russian has diphthongs, and they all are falling diphthongs[8], i.e. they all end in non-syllabic [j/i̯]:

[aj] as in *gajka* (a screw);
[oj] as in *bojko* (readily/briskly);
[ɨj] as in *krasnyj* (red);
[uj] as in *bujnyj* (turbulent/lush);
[ej] as in *lejka* (a watering pot).

There are no diphthongs in Russian with the initial component [ɛ] because in Russian [ɛ] cannot occur before a soft consonant, and a semivowel [j] plays the same role as the soft

[8] In falling diphthongs, the first element is syllabic, while the second one is non-syllabic (Heger, 1992).

consonant /j/ does. (Jones & Ward 2011: 75). Jones & Ward (2011) also argue that the first part of diphthongs is subject to the same allophony as their constituent vowels, as well as to the reduction in the unstressed positions in a fast speech.

What is common of Danish (Grønnum 2001: 255) and Russian (Hickey, 1986) diphthongs is that they are phonetic by nature. However, compared to Russian, Danish beyond falling diphthongs ending in [w], [j], [ɐ̯], e.g., [œw], [yw], [ew], [ɔ̝w], [ɐ̝w], [iw], [øw], [uj/i̯], [äj], [ʌ̟j], [ɛj], [äw/äu̯], [iɐ̯], [ɛɐ̯], [eɐ̯], [yɐ̯], [øɐ̯], [ɶɐ̯], [uɐ̯], [ɒɐ̯], [ɶɐ̯] [9], has also rising diphthongs[10] beginning with [j], as e.g. [jä], [ju], [jy], [jɑ̟], etc.

It is possible to assume that since no falling diphthongs ending [w] and [ɐ̯] are found in Russian, this kind of diphthongs would be a potential difficulty for Russian natives. I assume that this may result in the spelling-induced consonantization of the glides [w] and [ɐ̯], according to the theory of spelling interference mentioned in section 2.2.4., when the corresponding letters *v* and *r* would trigger sounds [v] and [ɻ]. However, if we take into consideration, that learners are aware of the vocalization of /r/ after a vowel, then, another scenario may take place and the result would be a total omission of the element [ɐ̯] in diphthongs and, thus, [ɐ̯]-diphthongs may be subject to monophthongization. These two hypotheses will be tested in the error analysis of the reading samples.

3.3. Distinctive articulation features of Russian and Danish consonant phonemic inventories

Both Russian and Danish inventories of consonant phonemes are characterized by a series of similar distinctive articulatory features: these two are the manner and place of articulation. What makes the two inventories distinctive, is their particular supplementary articulation properties standing in binary or non-binary oppositions, such as a binary opposition palatalization vs. non-palatalization as well as voiced vs. voiceless in Russian; aspiration (occurs only in the syllable-initial position) vs. non-aspiration in Danish.

Table 5 gives an overview (Basbøll 2005; Avanesov 1956) of Danish (in red) and Russian (in blue) consonant phonemes. The consonant phonemes are presented in a single table for the purpose of comparison. The Russian palatalization is shown by "ʲ" in accordance with the IPA, (except from /ɕː/, /ʂ/, /ʐ/, /ʑː/ that have separate symbols for the pairs palatalized non-palatalized) and the absence of palatalization by the absence of this sign. For

[9] I do not take into the analysis diphthongs with *stød* by methodological reasons mentioned in section 3.1.
[10] In rising diphthongs, the first element is non-syllabic, while the second one is syllabic (Heger, 1992).

the Danish consonants the position-determined aspiration is shown, following Basbøll's (2005: 64) example, by means of a post-posted hyphen, that correspond to their ability to be aspirated only in a syllable initial position. Since almost all Danish consonant are voiceless this will be a default quality in the table, the few voiced Danish consonant phonemes will be shown with "ᵛ" only for the purpose of comparison, though this taxonomy is not typical of the IPA. **Table 5** also shows the main allophones (in parentheses) of the Danish phonemes, because in the error analysis the main consonant qualities, but not phonemes will be analyzed (as was the case with vowel allophony in section 3.1.)

As is seen from **Table 5**, consonant phonemes in both languages have articulation features within the common contrastive system of place (bilabial, labial-dental, dental, alveodental, alveolar, alveopalatal, palatal, velar, pharyngeal and glottal) and manner of articulation (plosive, fricative, non-lateral, affricate(d), nasal, lateral, trilling and gliding).

Additionally, aspiration inherent to Danish syllable-initial /p, t, k/ is often described as a supplementary contrastive feature of consonants, however, Grønnum (2005) suggests an alternative way of defining aspiration as an articulation feature subject to neutralization in a syllable final position. I shall use the term binary opposition regarding the aspiration since it has the representation of two members and these members are phonemically distinctive (compare minimal pairs ***bind*** [b̥in] - ***pind*** [b̥ʰin], ***kø*** **[**g̊ʰøʔ**]** - ***gø*** [g̊øʔ], ***betaget*** [b̥eˈd͡s̪as̪ðɣ̞] -

Place/ manner of articulation	**bilabial**	**labial-dental**	**dental**	**alveo-dental**	**alveolar**	**alveo-palatal**	**palatal**	**velar**	**uvular /pharyngeal**	**glottal**
plosive	/p-/ (b̥ʰ) /b-/ (b̥) /p/ /pʲ/ /b/ /bʲ/	/f/ (f) /f/ /fʲ/	/t/ /d/		/d/ (d̥) /dʲ/ /tʲ/			/k-/ (g̊ʰ) /g/ (g̊) /k/ /kʲ/ /g/ /gʲ/		
fricative		/v/		/s/ /sʲ/ /z/ /zʲ/	/s/ (s)	/ɕ:/ /ʂ/ /ʐ/ /ʑ:/		/x/ /xʲ /		h (h)
non-lateral							/ɕ/		/rᵛ/ (ɻ̝) or (ʁ̞)	
approxi-mant		/vᵛ/ (v) or (w/u̯)			/ðᵛ/ (ð̞ɣ̞)			/jᵛ/ (j/i̯)		

affricate(d)			/t͡s/		/t-/ (d̥s̥)	/t͡ɕ/				
nasal	/m/ (m) /m/ /mʲ/		/n/ /nʲ/		/n/ (n)				/ŋ/ (ŋ)	
lateral			/ɬ/		/l/ (l) /lʲ/					
trilling						/r/ /rʲ/				
gliding							/j/			

Table 5. Russian (in blue) and Danish (in red + with main allophones in parentheses) consonant phonemes

bedaget [b̥e̥ˈd̥ḁsð̥ˠ]) not as in English, for example, where the aspiration is not a phonemic quality. What is in fact more important for the current study is the absence of such a phonemically contrastive feature as aspiration in Russian. The latter leads to the assumption that this distinctive phonemic feature may turn out to be a potential ground for a foreign accent with the disaspiration of /p/, /t/, /k/, as well as confusion of the aspirated and non-aspirated consonant qualities, i.e. the assignment of aspiration where it should *not* be, and vice versa.

The major distinctive phonemic contrast (in supplement to place and manner of articulation) of the Russian consonant phonemes (and their allophones) is a binary opposition palatalized vs. non-palatalized. Compared to the Danish opposition aspirated vs. non-aspirated, it is more representative in terms of the number of phonemes that belong either to palatalized or hard consonants (only /t͡ɕ/, /ɐ:/, /j/ and /ʑ:/ are always palatalized, while /t͡s/, /ʂ/, and /ʐ/ are always hard). The palatalization is characterized by the movement of the central part of the body of the tongue towards the hard palate, which gives a soft sounding of the consonant. On the level of articulatory habits, the Russian palatalization can bring additional Russian-like pronunciation in Danish. The error analysis will show the exact influence of the distinction hard-vs.-soft on the Danish pronunciation. Russian learners are usually aware of the absence of palatalized consonant in Danish, however, as my teaching experience showed this sometimes leads to an opposite effect, and learners tend to pronounce Danish consonants similarly to Russian hard consonants, which is wrong. The latter often results in an unnecessary velarization, probably also because Russian is often characterized (Avanesov, 1956) as a velarized language. My hypothesis is that the transfer of the Russian opposition palatalized/non-palatalized into Danish may result in an excessive velarization of the Danish /l/, as well as palatalization of /b/, /d/, /g/ especially before Danish front /i/, /ɛ/, /y/, /e/. This hypothesis will be in the focus of the error analysis.

Another major distinction is the dental articulation of a series of allophones of the Russian hard phonemes /t/, /d/, /s/, /n/, /z/, /t͡s/. The dental articulation of English alveolar sounds is traditionally typical of the Russian native speakers of English. The same would probably be true of the Danish allophones of the similar fricative phonemes /d/, /s/, /t/, /n/ alveolar by origin. What is remarkable is that the dentals' paired soft phonemes /tʲ/, /dʲ/, /sʲ/, /nʲ/, /zʲ/ in Russian are alveolar. The latter may result in the transfer of dentalization into Danish, but this will be testen in the error analysis.

As for the Danish uvular /r/ and /ŋ/, new to the Russian natives, /r/ will probably be exposed to the slightest assimilation with or replacement by hardly similar Russian thrilling phonemes /r/ and /rʲ/, while /ŋ/ will have a major advantage, according to SLM, since no similar sound is found in Russian. However, the allophone [e̯] of the Danish /r/, a non-syllabic vowel segment by nature, will probably sound more consonant-like, because 1) there is no vocalization as a regular phonological process in Russian; and 2) the effect of spelling interference mentioned in section 2.2.4. would probably trigger [ɐ̯], and not [e̯].

Danish /ð/ has always been a partcular challenge for Russian learners at the beginners' level. However, in most cases /ð/ is *a* most vivid demonstration of Flege's SLM. The intermediate and advanced Russian learners of Danish usually pronounce it native-like. However, the pronunciation of the lateral [l] insetad of /ð/ may take place. The latter happens, because learners do not put forward the front part of the body of the tongue with the tip of the tongue touching lower teeth, but lift it towards the hard palate instead, with the tip of the tongue touching the aleveolar ridge and the lateral wings of the tongue slightly down. This makes /ð/ sound like a lateral fricative rather than a non-lateral alveolar.

One of the most contrastive Danish consonant phonemes is the aspirated voicelss affricated alveolar /t/. I assume that since in terms of articulation it is closest to the Russian /t͡s/, this would lead to a typical /t͡s/-overtone in the sounding of the Danish /t/ according to the principle of equivalence classification discussed in section 2.2.3., since the Danish aspirated affricate /t/ (with as the main allophone [d̥͡s]) resembles most the Russian /t͡s/.

Compared to Danish, Russian is enormously rich in voiced consonants and this will definitely put a voiced trace on the Danish articulation of Russian speakers in case of non-aspirated Danish /b, d, g/. Danish [s] in the intervocalic position may be prone to be voiced to [z], which is not found as an allophone of /s/ in Danish.

Thus, proceeding form the above given contrastive overview, I hypothesize that the Russian foreign accent in the articulation of Danish consonants may manifest itself in the following features:

- disaspiration of /p/, /t/, /k/;
- velarization of /l/;
- voicing of non-aspirated consonants /b/, /d/, /g/, also of the intervocalic [s].
- palatalization of /b/, /d/, /g/ especially before Danish front /i/, /ø/, /ɛ/, /y/ and /e/.
- dentalization of /d/, /s/, /t/ and /n/;
- /r/-assimilation to a thrilling /r/; "consonantization" of [ɐ̯];
- [t͡s]-overtone in the Danish /t/.

3.4. Word stress in Danish and Russian

The previous sections of my contrastive overview were dedicated to the comparison of the two phonological systems on the segmental level. As was mentioned earlier, this study also addresses the issue of the Danish word stress assignment by late Russian learners. It will be a target of our second word list, along with the diphthongs.

My decision to study Russian foreign accent on the level of word stress was not accidental. On the one hand, "the acquisition of word stress assignment by late L2-learners has received limited attention in the L2 literature" (Archibald 1998: 177), and as for the language combination Russian (L1) - Danish (L2) no previous research has been done at all. However, this level of the second language phonology is promising in terms of the foreign accent improvement, since adults are capable of resetting their L1 metric parameters to the L2 setting (Archibald 1998: 177). Thus, the current accent study of the word stress assignment would have a practical significance for Russian learners of Danish. On the other hand, methodologically, the word stress assignment logically seems to be a next step in the current Russian accent study, because segments are organized hierarchically into syllables (Hall, 2006) and on the suprasegmnetal level the word stress or its absence function as major syllable properties (Hall, 2006). Since the scope of the current thesis does not admit a more extended research on the word stress assignment under various phonological conditions, I shall focus on the issue of word stress assignment when "the word is chosen as a focus word" (Gilbert 2008: 15). Moreover, this part of my thesis should lay the foundation for further research on the Russian foreign accent features in Danish on the level of sentence or prosodic stress assignment.

The word stress as a suprasegmental characteristic of the word phonological image, both in Danish and Russian has a dynamic nature. It means that a stressed syllable is

produced, according to Avanesov (1956: 64), with a more tensed articulation of the syllable segments, especially vowels. In Russian, "more tensed" does not mean, however, that the stressed vowel is always long, and thus cannot be opposed to short vowels. It is rather a bit longer, compared to the unstressed vowels in the word.

Russian stress patterns can be hardly described from the point of view of regularities, since word stress in Russian cannot be attributed to a specific type of syllables or a type of a vowel (Avanesov, 1956). To know where the stress should be set, it is necessary to know the word (Avanesov, 1956). The word stress in Russian is not fixed and does not depend of the order number of a syllable in a word *ˈme‧bel‧ny* (furniture-related), *ˈkraj‧ny* (extreme, adj.) – the stress is on the first syllable; *pri‧beˈ‧gat* (to run to a place), *pe‧re‧vo‧ˈdit* (to translate) – the stress is on the last syllable; *u‧sta‧ˈnov‧ka* (an installation) – on the third syllable; *ras‧ˈsmat‧ri‧vat* (to consider) – on the second syllable. Moreover, a word stress variation is a typical characteristic of Russian. Word stress can be movable depending on a word's grammatical form *smely* (brave) – *smeˈleye* (more brave); *noˈga* (a leg) – *ˈnogi* (legs), as well as derivational processes, historical change, professional or dialectal use (Lagerberg, 2007).

In the field of Russian accentology, word stress patterns are usually studied (Ukiah, 2002; Sharapova, 2000; Lagerberg, 2005; Lagerberg, 2006) in relation to a particular class of morphologically similar classes within part of speech, since no "general" rules applicable to all the parts of speech can be formulated.

As for the word stress assignment in Danish, compared to that one in Russian, it can be more or less predicted, and general rules concerning the assignment of word stress can be formulated. According to Grønnum (2005: 245), general word stress patterns can be systematized according to the following rules, with exceptions, of course:

- Word stress can only fall on the syllable with the full vowel.
- If there are more than one full vowel in the word, and one of them is a long one, then the syllable with the long vowel will take the stress.
- If there are more than one long vowel in the word, the first syllable with the long vowel will take the stress.
- If there is no long vowels in the word, the last syllable with a short full vowel followed by a consonant will take the stress.
- Borrowings from French have stress on the last syllable.
- If ending in a nasal consonant, a word would have the word stress on the last but one syllable.
- Foreign words ending in /r/ never have the word stress on the last syllable (with a few exceptions).

- Prefixes, sush as ***be-, ge-, er-, for-,*** are usually unstressed. Some of them, such as ***u-, und-, mis-, van-*** can be either stressed or not.

Above, I spoke about the primary stress. However, in both Russian and Danish a secondary stress may be distinguished. In Russian, the secondary stress is inherent to compounds and non-compound long words. It is important to note, that in a few-stem compounds the secondary stress is usually assigned to the first stem, and the main stress – to the second or following stems, e.g. *ˌdalnevosˈtochny* (Far-Eastern*)*, *samoˌletostroˈyeniye* (aircraft construction) (Avanesov, 1956).

In Danish the secondary stress in typical of some suffixes in non-compound words, for example, ***-dom, -hed, -skab, -som, -vis, -bar, mæssig, -dømme*** (Grønnum, 2005). However, the secondary stress generally is more typical of compounds (komposita) in Danish. The general rule about the assignment of the secondary stress in compound words, according to Heger (1992: 125) is that the first stem of the compound carries the main stress on *that* syllable, which carries the main stress in an isolated pronunciation of the stem. The secondary stress is assigned to the last stem of the compound on *that* syllable, which carries the main stress in an isolated pronunciation of this stem, as for instance, ***ˈengelskˌlærer,*** ***ˈmorgenˌmenneske*** (Heger 1992: 125). However, there are numerous exceptions to this rule e.g. ***medˈlidende, sydˈvest***, etc. (Fischer-Jørgensen 2001: 4-6). When one compound forms the final part of a new longer compound, the same rule is applied, e.g. ***ˈvoldgrav*** – ***ˈslotsˌvoldˌgrav*** (Heger 1992: 125).

A third type of the word stress called a *weak stress* ("svagtryk" – usually marked as ˳) (Heger 1992), can be often distinguished in Danish. The latter is typical of cases, when a compound forms an initial part of a new longer compound, normally the last stem of the original (initial) compound would carry the weak stress, while the last component of the new compound would have the secondary stress, e.g. ***ˈtryk˳luftˌbor*** (Heger 1992: 125).

We can see that secondary stress principles are different in Danish. It is possible to assume that Russian native speakers would probably tend to set the secondary stress closer to the beginning of the Danish word instead of the main stress. Moreover, the distinction between stressed or non-stressed Danish prefixes and suffixes will be probably the most serious challenge, and thus a potential ground for a foreign accent in the word stress assignment. Another possible scenario is the ignorance of the secondary stress.

Another potential difficulty will be hidden in the Danish words carrying a double primary stress, such as compound numerals; words, consisting of a preposition and an adverb

(ˈ***bag*** ˈ***efter,*** ˈ***der*** ˈ***for***)[11], and some random words (ˈ***abso*** ˈ***lut,*** ˈ***di*** ˈ***rekte,*** ˈ***alle*** ˈ***rede***)[12], (Grønnum, 2005) or adjectives and verbs with the first stem which indicates a very high degree of the second one (Heger, 1992; Fischer-Jørgensen, 2001), e.g. ˈ***is*** ˈ***kold,*** ˈ***lyn*** ˈ***hurtig***, etc. The double main stress is absolutely non-typical of Russian word stress principles, and thus will be probably ignored or produced as if there were a secondary and main stress in the word. All these potential "stumble blocks" will be considered while preparing reading materials for the reading task.

4. Collecting empirical data

In section 2, I gave a short outline of the case study and its methodological principles. Section 4 will present the linguistic experiment carried out as a part of the current project in a more detailed way.

4.1. Preparing reading materials

4.1.1. Word list 1

The first world list (further referred to as WL1) consists of words with vowel and consonant segments as target sounds for the error analysis (see **Appendix 2**). Words with short vowels as target sounds were chosen in such a way that those Danish vowel segments which hypothetically could be subject to the qualitative reduction in unstressed positions (according to degrees of vowel reduction in Russian analyzed in section 3.1.2.), would occur in the pre-stressed and post-tonic positions. That allowed me testing the hypothesis about the excessive reduction of unstressed Danish vowel qualities by Russian native speakers influenced by the reduction patterns of their mother tongue.

As far as the consonant targets are concerned, the words containing them were chosen according to the principle of having a target consonant sound in the most illustrative positions. The target words for the target consonant sounds, which were predicted in the theoretical comparative study to be pronounced non-native like, were selected in such a way that they would cover the target sounds' syllable-initial and syllable-final positions, as well as in the middle of a word.

[11] However, some native speakers would pronounce such words with one main stress and one secondary stress.

[12] See footnote 11.

It should be noted, that in my project I share Grønnum's (2001: 258) point of view in classifying Danish [ð̞̯̬̥] as an approximant rather than a semivowel. Therefore, [ð̞̯̬̥] was included in WL1. I shall further use the term *semivowel* in connection with the following non-syllabic qualities: [j/i̯], [w/u̯] and [ɐ̯] as allophones of /j/, /v/, and /r/, respectively. Sounds [w] and [j/i̯] however are also relevant as allophones of /g/. Since I treat [j/i̯], as well as [w/u̯] and [ɐ̯] as allophones of consonant phonemes I have included these semivowel qualities in WL1 as allophones of consonant phonemes and shall discuss the pronunciation of these qualities in the section about the results of the error analysis for consonants. These semivowels shall be also in the focus of our analysis as diphthong components in section 5.3.1.4.

Overall, the WL1 consists of 130 words with target vowels and consonants. The words were shuffled, so that the subjects could not find any regularity in the segments occurrence. (see **Appendix 2**). **Appendix 3** shows the target vowel segments, and **Appendix 4** – the consonant segments.

4.1.2. Word list 2

The second word list (further referred to as WL2) (see **Appendix 5)** for the reading task consists of target words for the word stress assignment and words with diphthongs as target segments. The word stress targets were chosen in such a way that they include words with two primary stresses and with one primary and one secondary stress as well as words with one primary stress and more than one secondary stress. For the word stress targets, see **Appendix 6**. Some of the words stress targets were chosen according to the word stress patterns described by Grønnum (2005: 245). See section 3.4.

The target words for the word stress assignment were shuffled with the diphthong targets. See **Appendix 7** for the diphthong targets. The latter ones were chosen in such a way that both falling and rising diphthongs would be covered, in order to find out if there is a correlation between the structure of the diphthong and the pronunciation of the latter by the Russian native speakers. Overall, the WL2 consists of 51 shuffled items: 26 word stress targets and 25 diphthongs targets. ***Evnesvag*** was a two-target word with two target diphthongs.

4.1.3. Text sample

While the WL1 and the WL2 were aimed at revealing accent features on the segmental level (pronunciation of consonants and vowels) and one aspect of the suprasegmental level – word stress, the third task – reading a small text (further referred to as **T**) aloud – provided data for the global accent assessment, in order to find out whether SIPT can decrease the degree of the global foreign accent in Danish learners with Russian as their mother tongue, or not. The T was taken from a student book *"Skolegade 4"* (Sandal, 2005: 79), see section 6. The level of this book corresponds to that of upper intermediate and advanced students. I shall further give a more detailed description of the recording and rating procedures for the T-task separately in section 6.

4.2. Procedure

4.2.1. D-vs.-R taxonomy

The recording of the reading samples took place in Russia at *Moscow State Linguistic University* (further MSLU) and in Denmark in language schools *Lærdansk Aarhus* and *Lærdansk Sønderborg*, as well as *AOF Sprogcenter Aabenraa*. Overall, 12 subjects with Russian as L1 took part in the recording in Denmark and 15 in Russia. This fact stands for the D-vs.-R-taxonomy.

The idea behind this D-vs.-R taxonomy is that all the students from MSLU had a SIPT when they started learning Danish, which anticipated the main language practice course, while in the case of students of the mentioned language schools, the teaching of the Danish language pronunciation has been integrated in day-to-day teaching activities and students did not have a special four-month introductory course on the Danish pronunciation.

This division of the subjects into two groups was mainly needed to test the hypothesis about the role of SIPT as an accent-mitigating factor, by means of the global accent assessment. However, the D-vs.-R taxonomy was also applied in the error analysis to see whether the D-group and the R-group would have similar or different typical accent features and in what way SIPT could contribute to the foreign accent reduction as opposed to living in the country and being exposed to the Danish native input.

4.2.2. Recording Procedure

The recording procedure was identical for all the participants. All the recorded samples are available as a digital supplement to the thesis. See **Appendix 25.** Each participant was offered to read the three types of materials in the following order: WL1 – T – WL2. The reading materials were not in any way introduced to the participants before the recording. Only instructions about reading words at a natural pace were given. Thus, 27 samples of WL1, WL2 and T were recorded. It should be noted that in the case of the T-readings, the title was not read by all the participants, but this fact is considered to be a minor issue, since this would affect the ratings.

Since the recordings were anonymous, each participant received his or her personal participant number (PPN). Personal numbers were later used in all the file names and the error analysis tables. The following two types[13] of taxonomy were used as interchangeable principles in notations:

1) R + PPN - for example, R3 stands for the participant from the R-group with SIPT, whose PPN was 3.
   D + PPN - for example, D6 stands for the participant from the D-group without SIPT, whose PPN was 6.
2) 1 + PPN stands for participants from the R-group, e.g. 1.1., 1.6.
   2 + PPN stands for participants from the D-group. e.g. 2.1., 2.6.

Thus, for instance 1.4.WL1 stands for the reading sample of the WL1 read by a participant from the R-group whose PPN is 4, while 2.4.T stands for the reading sample of the text by a participant from the D-group whose PPN is 4.

After having read the WL1, T and WL2, the participants were offered to fill out a questionnaire consisting of 20 questions (see **Appendix 1**). The questionnaire from the theoretical point of view was wholly and totally based on the overview of the factors said to determinate accent degree according to numerous previous studies - see section 2.2. The

[13] I had to preserve the usage of these two types of taxonomy, since letters *R* and *D* had been applied in the announcement of the participants during the recording procedure even before the error analysis, while number codes were used afterwards in the file systematization. Moreover, the letter "codes" applied are more convenient for distinguishing the two groups of subjects in the text of our project, while it was more convenient to work with numbers while doing error analysis.

information reported in the questionnaires would help mainly in the analysis of the global accent ratings. The questionnaire made it also possible to sketch general linguistic portraits of the participants.

4.3. Subjects

I recorded 27 subjects, 18 females and 9 males. According to the questionnaires, they were aged between 19-60 years. All the subjects speak the modern Russian literary language (see section 2.4.) as their L1. It is important to note that the distinctive features of the Russian phonemic inventories, the mentioned weakening of the vowels and the peculiarities of the word stress assignment are inherent to the pronunciation of all the Russian subjects, recorded in Denmark and in Russian.

Although the percentage of Russian usage everyday (from 10% - 90% of all the languages in use including English, Lithuanian, Latvian, Ukrainian, Belarusian and Chechen) varies from subject to subject due to different study, work or family conditions, they all speak Russian native-like. **Figure 4** shows a more detailed overview of the subjects' linguistic portraits, as based on the questionnaires. See **Appendix 1** for the questionnaire.

All the subjects with PPNs 2.1.-2.8, 2.10-2.13 (on the light green field in **Figure 4**) have studied or are studying Danish as a second language in Denmark. D5 (2.5), however, started learning Danish as a foreign language in Russian as an undergraduate student. Nevertheless, I referred D5 to the D-group, because D5 have lived in Denmark and studied as a full-degree student for approximately a year, of which D5 had one semester of graduate studies in Danish. D5 have for certain time followed a course on Danish as a second language in a Danish language school, and never had any SIPT as intensive as the one that the R-subjects received when they started earning Danish.

All the R-subjects with PPNs from 1.11-1.15 (on the light orange field in **Figure 4**) have studied Danish as a foreign language in Russia. R11 stayed in Denmark for three weeks for a summer language course, and R9 spent 10 days in Denmark as a tourist. All the R-subjects have had Russian native teachers with Danish as a foreign language compared to the D-subjects, who had Danish native teachers (only D5 had three Russian native speakers and one Danish native speaker when D5 started learning Danish in Russian).

PPN	age/sex	Length/Instr (mos)	Danish %	speak to n/mo (h)	listen/n+MEDIA/week (h) outside school	less/week/ à 45 min
1.1.	19 M	24	10	0	30	10
1.2.	21 M	24	10	0	school only	10
1.3.	19 F	24	10	0	school only	10
1.4.	19 F	24	10	0	school only	10
1.5.	19 F	24	10	0	school only	10
1.6.	21 F	24	10	0	1	10
1.7.	19 M	18	10	0	9	10
1.8.	21 F	18	10	0	5	10
1.9.	20 M	18	10	0	4	10
1.10.	22 F	45	10	0	3	14
1.11.	21 F	45	20	5.5	6	14
1.12.	21 F	45	10	0	3	14
1.13.	22 M	45	10	0	3	14
1.14.	22 F	45	10	0	3	14
1.15.	20 F	42	10	0	3.5	14
2.1.	31 M	10	60	25 (w)	10	4
2.2.	31 M	17	5	3	2	4
2.3.	27 F	27	30	160 (w)	10	6
2.4.	22 F	30	15	15	7	6
2.5	22 F	48	35	5	1,5	10
2.6	30 F	36	80	every day (w)	every day	5
2.7	60 F	30	70	every day (h)	11	15
2.8	25 M	26	10	1	1	4.5
2.1	24 M	24	20	4.5	3.5	4
2.11	30 F	24	10	20	school only	20
2.12	30 F	18	20	school only	very little outside school	20
2.13	33 F	14	10	30	35	13

Figure 4. Linguistic portraits of the subjects according questionnaires

Abbreviations:

- *Length/Instr (mos)* – total number of months of instruction;
- *speak to n/mo (h)* – number of hours per months used to speaking to native speakers;
- *listen/n+MEDIA/week (h) outside school* – number of hours per week used to listening activities (mass media, music, films, native speakers);
- *less/week/ à 45 min* – number of lessons per week à 45 min;
- *(w)* – at work.
- *(h)* – at home
- *Danish %* – percentage of Danish use on an everyday basis out of 100% (all languages spoken).

For the error analysis, I chose 36 samples – 18 WL1 and 18 WL2 samples read by correspondingly 9 subjects from the D-group and 9 from the R-group. The chosen samples were read by the same subjects, except for one WL2 sample when D13 was changed to D10 because of D13's very heavy accent in the WL2 reading, which would otherwise make the reading sound unnatural and with breaks preventing from doing any analysis on the word stress assignment. In general, both in the case of the WL1 and WL2, the samples were chosen randomly.

As far as the T-readings are concerned, all 27 samples were taken for accent degree and accent comprehensibility ratings and shuffled in a random order supplemented with 4 T-samples of Danish native controls. See section 6 for more details on the T-task recording procedure.

5. Data analysis

5.1. Transcribing speech samples & error systematization

Overall, 18 samples or 3258 words were transcribed: 18 WL1s and 18 WL2s. T-samples were not transcribed, but shuffled and sent out directly to the raters. As was mentioned above, the IPA narrow phonetic transcription was applied for all 36 samples. The mispronounced sounds and word stress assignment different from the pronunciation recommended in *Den Store Danske Ordbog* were highlighted by hand in red. All the transcriptionsheets are presented in **Appendices 19, 20, 21** and **22**.

Since one of the two main goals of the current master thesis was to find out what the most typical features of the Russian accent are, I have decided to do the data systematization by focusing on the mispronounced elements. Firstly, all the final transcriptions were gathered in two spreadsheets, one for the D-samples, and the other one for the R-samples. Afterwards, each sample was copied into a separate column with PPNs as headlines of the column. Such a way of organizing all the transcribed samples allowed tracing all the varieties of the target elements across all the R- and D-subjects. Moreover, having two separate sheets for each group could give space for figuring out whether the typical features would differ in the two groups.

The error systematization was realized by means of counting the number of the correct readings of the target sounds and of all the variants which differed from the recommended. The latter ones were noted as *. The error systematization was done separately for the vowel, consonant, diphthong and word stress targets. Below I shall discuss the results of the error

systematization and shall do an error analysis in order to find out what the typical features of the Russian accent are.

5.3. Error analysis

According to Flege's Speech Learning Model (SLM) (theoretical model of the second language learning introduced in section 2.2.) L2 learners tend to classify an L2 sound which is acoustically similar to an L1 sound into a pre-existing phonic category (Birdsong 2007: 100), i.e. process the L2 sounds through their well-established L1 phonological system, and as a result in the long run more similar sounds lack in native-likeness compared to more dissimilar sounds.

Another theoretical approach mentioned above in section 2.2. - Similarity Differential Rate Hypothesis (SDRH) – analogically to SLM addresses an accent issue from a dichotomy point of view (dissimilarity vs. similarity), but argues in favor of speaking about different rate of acquisition for similar and dissimilar sound rather than just for a better or worse performance at different stages of a L-acquisition. In our current research, I argue in favor of the former model (see section 2.2.), and below shall try to substantiate it with particular examples.

5.3.1. Vowel features

Proceeding from the principle of "equivalence classification" I earlier formulated the hypotheses about accent features in the case of Russian accent by means of a contrastive method, having comparing two phonological systems, and predicted the following eventual realizations of the "equivalence classification":

For vowel segments:

- excessive and unnecessary qualitative reduction of unstressed vowels;
- shortening of the long Danish vowels and lengthening of the short ones;
- fewer quality distinctive properties of the back vowels and front /i/ and /e/.

Let us now do the error analysis for the vowel targets.

5.3.1.1. Front and central full vowels

5.3.1.1.1. Qualitative features

Target words	t/s[14]	+	[a]*	[e]*	[ɐ]*	[ə]*	[ą:]*
p**a**nde	ą	6	1				2
p**a**nere		4	3		2		
sof**a**		3			4	2	
kærlighed	ε	9					
erkende		4		4		1	
kæresterere		3		6			

Table 6. Pronunciation of the target [ą], [ε] by the R-group

Target words	t/s	+	[a]*	[e]*	[ɐ]*	[ə]*
p**a**nde	ą	8	1			
p**a**nere		2	1		3	3
sof**a**		1	1		6	1
kærlighed	ε	8		1		
erkende		7				2
kæresterere		8		1		

Table 7. Pronunciation of the target [ą], [ε] by the D-group

As is seen from the error systematization, Danish front vowels [ą] and [ε] were most often pronounced correctly by both the D- and R-subjects in stressed positions (see **Table 6** for the R-group and **Table 7** for the D-group; further in the text all the error systematization tables for the R-group would come before those for the D-group).

As for the unstressed positions, the D-subjects produced more correct variants of the target unstressed [ε] in ***erkende*** and ***kæresterere.*** Even though the word stress in ***erkende*** in 5 out of 4 cases was wrong, only 2 [ə]*s were produced instead of [ε]; while in the R-group 4 out of 5 incorrect variants were [e]* instead of [ε]. Here it is possible to assume, that it is more typical of Russian to have [e] rather than [ε] at the beginning of a word. Words with an initial [ε] are not numerous in Russian, and often are of a foreign origin. The reduction of [ε] to [ə], even with a wrong words stress as well as an illustrative example of the post-tonic [ą] reduction to either [ɐ]* or [ə]* in ***sofa***, especially in the D-group with only 1 correct pronunciation, lay ground for verifying the hypothesis about the post-tonic and pre-tonic vowel reduction of the Danish phonemes /a/ and /ε/ to a more closed allophone according to the Russian weakening of vowels.

In my predictions about the front vowel reduction, I pointed out the phonemes /a/ and /ε/ as major eventual targets for weakening in unstressed positions. The data analysis showed however, that this could have been extended over other vowel qualities. Probably, the most

[14] t/s stands for the target segment

convincing examples of a qualitative reduction of front and central vowels in unstressed syllables according to Russian vowel reduction patterns are those of [ę] in ***beslægtet, forbillede*** made by both the R- and D-subjects. See **Tables 8, 9.**

Target words	t/s	+	[i]*	[iː]*	[ɪ]*	[iˑ]*
b**i**nde		2	6	1		
b**e**slægtet	ę	2			7	
forb**i**llede		2	5		1	1

Table 8. Pronunciation of the target [ę] by the R-group

Target words	t/s	+	[i]*	[ɪ]*	[ɛ]*
b**i**nde		2	7		
b**e**slægtet	ę	0		6	3
forb**i**llede		5	2	2	

Table 9. Pronunciation of the target [ę] by the D-group

Similarly to the above-mentioned [ą] and [ɛ], [ę] was reduced both in post-tonic and pre-tonic positions: altogether 13 out of 18 reductions to [ɪ]* in the first pre-stressed syllable of ***beslægtet,*** however, only 3 reductions to [ɪ]* in the post-tonic syllable of ***forbillede***. These cases of the reduction of [ę] were probably even in favor of the subjects, [ę] is even more similar to [ɪ] than the Russian [i] is. However, the reductions to [ɪ]* were mainly due to a wrong primary word stress assigned by 13 participants to the second syllable of ***forbillede***, thus [ę] was stressed, and since stressed, due to the spelling influence it was produced by 7 subjects as [i]*. In contrast to /a/ and /ɛ/, /i/ in ***vikar*** and ***livlig*** was produced correctly by the majority of the subjects (15 and 16 correct variants respectively for each word).

Not only front vowel segments were reduced in quality. The central [ä] in the pre-tonic position in ***utaknemmelig*** and the second pre-tonic syllable in ***apparat*** was reduced to [ɐ] by 5 out of 9 R-subjects. See **Tables 10, 11.**

Target words	t/s	+	[ɐ]*	[ɑ̃]*
m**a**ngle		8		1
ut**a**knemmelig	ä	4	5	
apparat		4	5	

Table 10. Pronunciation of the target [ä] by the R-group

Target words	t/s	+	[a]*	[ɐ]*	[ə]*	[ą]*	[ɑ̃]*
m**a**ngle		5	3			2	1
ut**a**knemmelig	ä	5	2	2			
apparat		5	2	1	1		

Table 11. Pronunciation of the target [ä] by the D-group

The D-group showed a less frequent reduction of [ä] in ***utaknemmelig*** and ***apparat.*** This was very likely due to less natural, slower and constraint readings by the D-subjects, especially those of ***utaknemmelig***. Such readings lead to the less natural and less fluent productions, where a qualitative reduction is less probable.

What was positive about these slightly slower readings of ***utaknemmelig*** and ***apparat*** by the D-group is that one could clearly trace a more retracted Russian [a], instead of the Danish central [ä]. It is assumedly right because of the above-mentioned *equivalence classification* in accordance with Flege's SLM.

Target words	t/s	+	[i]*	[i:]*	[ɪ]*	[i˙]*	[ę]*
binde	ę	2	6	1			
beslægtet		2			7		
forb**i**llede		2	5		1	1	
vilde	i	3					6
vikar		8			1		
livlig		9					

Table 12. Targets [ę] and [i] by the R-group

Target words	t/s	+	[i]*	[ɪ]*	[ɛ]*	[ę]*
binde	ę	2	7			
beslægtet		0		6	3	
forb**i**llede		5	2	2		
vilde	i	3				6
vikar		7		2		
livlig		9				

Table 13. Targets [ę] and [i] by the D-group

Other vivid evidence in support of Flege's SLM is the production of the Danish [ę] and [i]. See **Tables 12, 13**. In the stressed position only 4 out 18 possible correct pronunciations of [ę] were given in ***binde,*** while 13 subjects pronounced [i]* instead. This could be easily heard as the sound [i]* was purely Russian, and this could be substantiated by the fact that some participants gave a palatalized [b^{j}]* which would be natural before a front vowel [i] in Russian. Such poor results for the sound [ę] can be explained from the point of view of the phonological inventory of the Russian language. As was mentioned in section 3.1., Russian makes only distinction between vowel qualities [i], [ɨ] in stressed positions and [i], [ɨ] and [ɪ] in unstressed ones. No sound equal to [ę] can be found in Russian.

However, it would be a mistake to suppose, that the absence of [ę] in Russian would according to SLM, on the contrary lead to a better performance for this sound by Russian natives. The absence of [ę] gives an opposite effect due to a high degree of the similarity

between [i] and [ę], since the distinction between [i] and [ę] is very narrow in terms of height, the Russian learners of Danish tend to automatically fail to preserve it, and classify [ę] as [i]*.

Nonetheless, the latter does not automatically mean that Russian natives are not aware of this distinction. They *are* (no teacher of Danish would ignore explaining the difference between the two sounds), and this awareness accounts for the idea that the [i]-vs.-[ę]-confusion is a two-sided phenomenon, and has an impact on the performance of both sounds. In other words, the Russian natives, on the one hand classify [ę] as [i]*, especially, when letter *i* stands for the former sound, and on the other hand, being aware that there *is* [i]-vs.-[ę]-distinction in Danish may confuse [i] with [ę]*. The latter may lead to semantic mistakes in the case of minimal pairs, such as ***ski – ske***.

The fact that the Russian [i] is similar to Danish [i] does not directly lead to the conclusion that [i] would always "get higher scores" compared to [ę], and I have an empirical evidence for that: in ***vilde*** 12 out of 18 participants produced [ę]* instead of [i]. This happened assumedly, because Russian learners, being aware of the [i]-vs.-[ę]-distinction tend to open [i] to [ę] in a closed syllable, what is not an absolute rule in all cases, and secondly due to a high similarity between [ę] and [i].

Thus, with the example of a lacking [i]-vs.-[ę] distinction in Russian accent, it was shown that the equivalence classification may be regarded as a two-sided phenomenon. Therefore, it is possible to empirically extend Flege's idea by saying that not only *do* advanced the L2 learners demonstrate a worse performance for the L2 sound (A) more similar to the corresponding L1 sound (B), they may also have a tendency to produce A instead of B. Only large exposure to the native input can make Russian learners of Danish be able to produce these two distinctive sounds correctly, and this may happen even long after a learner have gained an advanced command of Danish, as the current experiment showed.

Whereas in the above mentioned short sounds [ą], [ɛ], [ä], [ę] and [i] the realization of the equivalence classification effect was evident in stressed positions, other accent features characterize the pronunciation of the target stressed [e]. See **Tables 14, 15**.

Target words	t/s	+	[ɪ]*	[ɛ]*
p**æ**dagog		**8**	1	
p**æ**dagogisk	e	**8**	1	
h**e**mmeligt		**6**		3

Table 14. Target [e] by the R-group

Target words	t/s	+	[ɪ]*	[-]*	[ɛ]*	[i]*
pædagog pædagogisk hemmeligt	e	**7** **9** **3**	1	1	 4	 2

Table 15. Target [e] by the D-group

In the stressed position in ***hemmeligt*** it was produced by 7 subjects as [ɛ]* and 2 as [i]* (out of 18). The former sound was produced assumedly due to the initial [h]-influence. In Russian [e]-production after [h] would always imply palatalization of [h]. Thus, a strive to preserve the Danish hard [h] resulted in 7 cases in a more open front vowel quality, more typical of the Russian ”C+[ɛ]”, where C is a hard consonant. What is interesting, is that in the unstressed positions in ***pædagog*** and ***pædagogisk*** only a couple of the target [e]-sounds were produced with a change to an unstressed [ɪ]*, probably due to the facts that if produced without reduction at a slow rate, corresponding Russian words *pedagog* (a teacher) and *pedagogichesky* (pedagogical) would have [e] in both words after the initial [p^{j}].

A very vague for Russian natives, Danish front-mid vowel quality [a] (more front than the Russian /a/) which usually occurs in a post-/r/ position as in the target word ***dreng*** was incorrectly produced as [e]* and [ɛ]* (4 and 3 times respectively, out of 18). If we consider, that [ɛ]*-variants would hardly cause any comprehensibility problems among native speakers, then the performance for the target [a] in ***dreng*** was better in the D-group. This was probably due to a larger exposure to the native input compared to the R-subject, whose mispronunciation in this case was assumedly the result of the *spelling interference* (Miglio & Fukazawa 2006; Ehri & Wilce 1980), mentioned in section 2.2.4, and lack of the native input.

Similarly to Miglio & Fukazawa’s theoretical approach, after having done the error analysis, I can argue that in some cases the Russian natives’ pronunciation in Danish is not the result of a direct interference from the Russian language or equivalence classification, but that it is rather a complex “phenomenon whereby the spelling of the word…” in the L2 “…triggers a correspondence between…” an L2 spelling symbol “…and the pronunciation of the same symbol in the native language…” (Miglio & Fukazawa 2006: 4145).

I argue that in Danish words where vowel allophones are represented in spelling by means of the letters also found in the Russian language (that *may* be or *are* used in the latter to represent a different vowel quality) a Russian-like pronunciation will have a greater probability. That accounts for the [e]* and [ɛ]* realizations in ***dreng,*** since in the Russian natives’ letter-to-sound system, the letter *e* would automatically stand for either sound [e]

after C^j or [ɛ] after a C, whereas the /r/-influence on a vowel quality typical of Danish remains to be neglected, as the latter phenomenon is absolutely alien to Russian.

Flege's SLM focuses both on the similar and dissimilar sounds. Above, I discussed the front and central short Danish vowel segments which have roughly speaking at least *some* similarity with major Russian vowels qualities. Now let us discuss the results for the dissimilar front vowel segments, namely [y], [ø̟], [œ̟], [ɐ̟], and all the long vowels [ɛː], [äː], [øː], [œː], [yː] and [ɐ̟ː]. As far as the long vowels [ɛː], [äː], [øː], [œː], [yː] and [ɐ̟ː] are concerned, I shall discuss the error analysis for them in section 5.3.1.1.2., in order to test the hypothesis about the shortening of long vowel separately.

A common foreign accent feature which characterizes four labialized front short Danish [y], [ø̟], [œ̟], [ɐ̟] is that the Russian accent manifested itself in a wider range of the mispronounced sounds produced compared to the front non-labialized vowels. See **Tables 18, 19, 20, 21.**

Target words	t/s	+
f**y**sisk	y	9
f**y**siologi		9
Lyngb**y**		9

Table 16. Target [y] by the R-group

Target words	t/s	+	[ʏ]*	[ɪ]*
f**y**sisk	y	8		1
f**y**siologi		6		3
Lyngb**y**		7	2	

Table 17. Target [y] by the D-group

The pronunciations of the Danish front open [y] (see **Tables 16, 17**) in target words ***fysisk, fysiologi*** and ***Lyngby*** proved to be convincing evidence in support of Flege's idea about a better performance for dissimilar sounds: 15 out of 18 subjects gave a correct variant in the three words. The R-group pronounced all the target [y] correctly in stressed and unstressed positions, while in the D-group the influence of the Russian corresponding terms *fizichesky (*physical) and *fiziologiya* (physiology) resulted in 3 cases of [ɪ]* in the second pre-stressed syllable of ***fysiologi*** and 1 [ɪ]* in ***fysisk.*** Two subjects gave a front-mid allophone [ʏ]* instead of the final [y] in ***Lyngby***, but this minor feature could be also heard in a native variant.

Target words	t/s	+	[ø˙]*	[y]*	[ɜ]*	[y˙]*
kysse		2	1	5		1
nødvendig	ø	9				
nervøsitet (*one failed)*		6			2	

Table 18. Target [ø] by the R-group

Target words	t/s	+	[ø˙]*	[y]*	[o]*	[ø]*	[ɜ]*	[œ]*	[ɵ]*
kysse		3	1	5					
nødvendig	ø	7			1	1			
nervøsitet		6					1	1	1

Table 19. Target [ø] by the D-group

A worse performance was shown for the target [ø]. See **Tables 18, 19**. In a stressed position in ***kysse,*** only 5 correct readings were given, while the top realization was [y]* - 10 subjects. What is remarkable is that in the unstressed positions in ***nødvendig*** and ***nervøsitet*** the number of correct variants was more than convincing in both groups. It turned out to be that the subjects could easier produce [ø] in the unstressed position rather than in the stressed one. I argue however that more words need to be pronounced with this target sound in order to formulate any regularity concerning the "superiority" of the unstressed position. What is only evident from our data is that [ø] is most often mispronounced as [y]*.

Target words	t/s	+	[y]*	[ø] *	[ɵ]*	[ə]*	[ʊ] *	[ɵ]*	[œ]*
trykke		0	9						
ømtålelig	œ	0		2	2	3	1	1	
tørklæde		7							2

		+	[œ]*	[ɵ]*
smør	œ	7	1	1

Table 20. Targets [œ] and [œ] by the R-group

Target words	t/s	+	[y]*	[o]*	[ø] *	[œ]*	[u]*	[ʊ] *	[ʏ]*	a[ɵ]*	[œ:]*	[ʉ]*
trykke		0	6				1	1	1			
ømtålelig	œ	2		1	2		1	1		1		1
tørklæde		5				1			1	1	1	

		+	[œ]*	[o]*	[o˙]*
smør	œ	3	4	1	1

Table 21. Targets [œ] and [œ] by the D-group

As far as the sounds [œ] and [œ] are concerned, the error analysis showed that these segments are generically susceptible to *narrowing* in terms of height to such qualities as [ø]*,

[ɵ]*, [ʏ]* and [ɵ]* as well as a tongue retraction. See **Tables 20, 21**. The latter tendency results in such accent qualities as [ɵ]*, [ʊ]* and even [o]*.

However, another feature that characterizes [œ̟], [ø̟] and [ɶ̟] production by the Russian learners is that in ***trykke*** (15 out of 18 subjects gave [y]*) the letter symbol is still superior to sound, i.e. the Russian speakers' pronunciation decisions are influenced by the correlation between the letter *y* and the sound [y]. The reason for that can be assumedly ascribe to the Russian morphophonological writing system in which letter-to-sound correlations are much less ambiguous than those in Danish.

5.3.1.1.2. Quantitative features

In this section I shall discuss the results of the error analysis for the long [ɛː], [äː], [ø̟ː], [œ̟ː], [yː] and [ɶ̟ː]. What was typical of all the vowel quantitative features is that they have been in many cases accompanied by *qualitative* changes. However, I shall focus on the shortening of long vowels and secondly on lengthening of short vowels, which was predicted in my hypotheses.

Target words	t/s	+	[a]*	[e]*	[ɛ]*	[ä]*	[eː]*	[ʌː]*
b**a**deværelse	ɛː	2		1	6			
bag**a**ge		4	1		2		1	1
f**a**re	äː	8	1					
r**a**re		5				4		

Table 22. Targets [ɛː] and [äː] by the R-group

Target words	t/s	+	[a]*	[e]*	[ɛ]*	[ą̟ː]*	[ą̟]*	[ä]*	[aː]*	[ą̟ˑ]*
b**a**deværelse	ɛː	1		1	3		4			
bag**a**ge		1	4		1		1		1	1
f**a**re	äː	4	1		1	1	2			
r**a**re		4	1				2	2		

Table 23. Targets [ɛː] and [äː] by the D-group

Of the two long segments [ɛː] and [äː] (see **Tables 22, 23)** the first one was shortened in ***badeværelse*** by the overwhelming majority of the subjects from both groups (15 out of 18)**,** while in ***baggage*** – if not reduced, it was produced qualitatively wrong as [e]* or [ʌː]*, [aː]* or [ą̟ˑ]*. As for the long [äː], it was shortened by more than half of the subjects mostly to [ä]* in the R-group, and to either [a]* or [ą̟] in the D-group.

The long segment [eː] saw major shortening in the D-group, where only 2 subjects gave correct long variants, while the rest 7 were distributed as [e]* (2), [ɛ]* (2), [eˑ]* (2) and [ɛˑ]* (1). See **Tables 24, 25.**

Target words	t/s	+	[eˑ]*
l**æ**se	eː	8	1

		+	[i]*	[iː]*	[ɨ]*	[iˑ]*
al**e**ne **s**ene	ęː	2 1	2	6 5		1 1
skr**i**ve K**i**na	iː	7 7	2		1	1

Table 24. Targets [eː], [ęː] and [iː] by the R-group

Target words	t/s		[ɪ]*	[e]*	[ɛ]*	[eˑ]*	[ɛˑ]*
l**æ**se	eː	2		2	2	2	1

Target words	t/s	+	[i]*	[iː]*	[ɪ]*	[ɨ]*	[ɛ]*	[ɛˑ]*	[e]*	[ę]*	[iˑ]*	[ɨː]*
al**e**ne **s**ene	ęː	3 3	2 1	1 1	1		1	2	1	1	1	
skr**i**ve K**i**na	iː	1 2	6 6			1					1	1

Table 25. Targets [eː], [ęː] and [iː] by the D-group

The target sound [ęː] in correspondingly ***alene*** and ***sene***, was shortened by 9 D-subjects and 4 R-subjects, while [iː] in ***skrive*** and ***Kina*** by 4 R-subjects and 13 D-subjects, both including half-long pronunciations, e.g. [iˑ]* and [ɛˑ]*. See **Tables 24, 25**. What is remarkable here is that the D-group outnumbered the R-group by giving much more shortened variants. This can be ascribed to the fact that the R-group had[15] SIPT with a special focus on the distinction between short and long vowels, thus giving evidence to give credit to it.

Target words	t/s	+	[u]*	[yˑ]*	[uː]*	[ʏ]*
r**y**ge	yː	5	1	1	1	1

		+	[øˑ]*	[y]*	[ø]*	[yː]*
k**ø**be	øː	3	1	2	2	1

[15] according to the information reported by the teachers of the R-group

		+	[œ̟]*	[œ̟ˑ]*	[œ̞] *	[ʏː]*	[ʉ]*	[ø̟ː]*
høne	œ̟ː	2	2	1		1	1	2
gøre	œ̞ː	6			3			

Table 26. Targets [yː], [ø̟ː], [œ̟ː] and [œ̞ː] by the R-group

Target words	t/s	+	[u]*	[y]*	[uː]*	[ʏ]*
ryge	yː	1	1	4	1	2

		+	[ø̟ˑ]*	[y]*	[ø]*
købe	ø̟ː	4	2		3

		+	[œ̟]*	[œ̟ˑ]*	[œ]*	[œː]*	[œ̞]*	[ɵ]*	[œˑ]*
høne	œ̟ː	3	2	2	1	1			
gøre	œ̞ː	3			1		3	1	1

Table 27. Targets [yː], [ø̟ː], [œ̟ː] and [œ̞ː] by the D-group

The same tendency is true of the long [yː] - only 3 shortened *-variants in the R-group and 7 *-variants in the D-group of which 4 were mispronounced as [y]*. See **Tables 26, 27**. A long [ø̟ː] in ***købe*** underwent primarily quantitative changes in both groups being shortened to either [ø̟]* or [ø̟ˑ]*. The same is true of the R-group's realizations of [œ̞ː] in ***gøre***, while in the D-group the shortening was accompanied with minor qualitative changes, primarily narrowing. The long [œ̟ː] in ***høne*** turned out to be a challenge for all the subjects and its readings gave only 5 out of 18 possible correct ones. The mispronounced variants were [ø̟ː]*, [ʏː]*, [œ̞]*, [ʉ]*, and [œ̟ˑ]* in the R-group. The D-group gave more shortened variants.

5.3.1.2. Back vowels

In the theoretical contrastive study, my main idea concerning back Danish vowels was that since the Russian phonological inventory of back vowels is limited to very few vowel phonemes, mainly /o/, /u/ and /a/, the Russian foreign accent in back vowels would mainly lie in fewer back vowel distinctions. My hypotheses were that the most challengeable would be the distinctive articulation of [ǫ], [ɔ̝], [ɔ̟] and [ʌ̟], the distinction between vowel qualities [u] and [ǫ], and that the articulation of [u] would be most native-like of all the back vowel qualities due to its phonological properties identical to those of the Russian stressed /u/.

Here we can hardly say that Flege's principle of equivalence classification could work for the phoneme /u/, since we should not speak in terms of "more or less" similar, but rather in terms of a total similarity. While in the case of [ǫ], [ɔ̝], [ɔ̟] and [ʌ̟] the equivalence

classification would be right to the point since for any Russian native speaker these four distinct short vowel qualities would resemble the allophones Russian /o/.

5.3.1.1.1. Qualitative features

Target words	t/s	+	[ʊ]*	[uː]*
r**u**tine		5	4	
ak**u**punktur	u	6	3	
k**u**lde		8		1

		+	[o]*	[u]*	[ɔ]*
g**o**d		5		4	
ir**o**keser	ǫ	3	5		1
b**o**liviansk		2	7		

Table 28. Targets [u] and [ǫ] by the R-group

Target words	t/s	+	[ʊ]*	[uˑ]*
r**u**tine		8	1	
ak**u**punktur	u	8	1	
k**u**lde		8		1

		+	[o]*	[u]*	[ɔ]*
g**o**d		2	6	1	
ir**o**keser	ǫ	0	7		1
b**o**liviansk		1	7		1

Table 29. Targets [u] and [ǫ] by the D-group

Having analyzed the collected data, I can substantiate my hypothesis about the native-like articulation of /u/ due to its correct variant as [u] in target words by the overwhelming majority of the subjects in a stressed position in ***kulde*** – in 16 out of 18 samples. See **Tables 28, 29**. On top of that, in the unstressed positions in ***rutine*** and ***akupunktur,*** it was reduced to [ʊ]* by a total of 5 and 4 subjects respectively for each word, which can be considered as foreign accent within a norm, because such a minor reduction towards a more closed and central allophone [ʊ] could be traced even in native speakers of Danish.

As far as [ǫ] is concerned it was, by and large, mispronounced in both groups of subjects as either [o]*, [u]* or in few cases as [ɔ]* in ***god***. See **Tables 28, 29.** What is interesting in the error systematization, is that for this stressed position the R-group demonstrated a clear tendency towards [u]* articulation instead of [ǫ] (4 out of 4 mispronounced), while the D-group gave more [o]*-variants (4 out of 5 mispronounced).

From the point of view of equivalence classification both of these accent realizations are quite predictable, since [ǫ] "lies between" [o] and [u] for a native Russian speaker. However, the fact that the R-samples were collected in two academic groups of students who had a similar instruction during their SIPT may lead to the conclusion that [u]*-variants of the mid [ǫ] was due to instruction reasons. Whereas in the D-group, one can evidently trace the spelling interference, mentioned above in section 5.3.1.1.1.

The effect of spelling interference also manifested itself in the unstressed syllables of ***irokeser*** and ***boliviansk*** with 5 and 7 variants [o]* respectively in the R-group and 7 ones in the D-group. It should be noted, however, that even though [o]* in the pre-tonic syllable of ***irokeser*** can be heard in native speakers, in the Russian samples [o]* had a purely Russian quality (see section 3.1.). This influence of the spelling can be of two types – one coming from subconscious associations with one's mother tongue, as was the case with ***dr<u>e</u>ng, b<u>o</u>liviansk, ir<u>o</u>keser,*** and the other – from a direct correspondence between an L2 sound and its representation in spelling.

Target words	t/s	+	[u]*	[ụ]*	[ʏ]*	[ʊ]*	[ǫ]*
l**u**kke	ʂ	0	7	1	1		
ungdommelig		0	2			6	1

Table 30. Target [ʂ] by the R-group

Target words	t/s	+	[u]*	[ụ]*	[ø]*	[ʊ]*	[ɔ]*	[ǫ]*	[ǫ·]*	[ə]*	[ʉ]*
l**u**kke	ʂ	2	3	2	1		1				
ungdommelig		1	1			4		1	4	1	1

Table 31. Target [ʂ] by the D-group

An evident and convincing prevalence of /u/-allophones in the readings of [ʂ] (see **Tables 30, 31**) as the target sound in ***lukke*** (10 out of 18 target sounds were pronounced as [u], 1 as [ụ]) and ***ungdommelig*** (3 as [u]*, 4 as [ʊ]*, 1 as [ʉ]*) gives evidence in favor of the spelling interference, and makes us believe that the spelling plays a huge role in the Danish pronunciation of Russian native speakers. This leads to the conclusion that learning though the "written" language and written input still works as a main factor in forming a learner's L2 pronunciation habits in the current case study.

In my hypotheses about the features of the Russian foreign accent in back vowels, I did not predict any weakening of back vowels. However, similarly to the above-mentioned non-predicted front [ę]-weakening, [ʂ] was exposed to [ʊ]*-weakening – this degree of reduction

is typical of the Russian /u/ – in the pre-stressed position in ***ungdommelig*** by respectively 6 R-subjects and 4 D-subjects. Such an acting on analogy with the Russian /u/-weakening in the case of [ʊ̟] supports the conclusion that replacing [ʊ̟] with [u] can be regarded as a typical feature of the Russian accent in Danish, especially when in spelling the letter *u* stands for the sound [ʊ̟], i.e. as the result of the above-mentioned spelling interference.

If one looks at the results of the error systematization for the back vowels from the point of view of equivalence classification, one will see certain regularity. Those Danish vowel segments which are open-mid and close-mid – [ʊ̞] and the advanced [ʊ̟] respectively – tend to be mispronounced by Russian native speakers as [u]* or more rarely as the allophones of the Russian /o/, the latter is more typical of [ʊ̞].

Target words	t/s	+	[ɔ]*	[ʊ̞]*	[o]*	[ʁ]*
st**o**rme	ʊ̟	6	3			
b**o**rgmester		6	1	2		
k**o**rrupt		0		1	7	1
k**o**rrektur		6	3			

		+	[o]*	[ɔ]*	[ʊ̟]*	[ə]*	[ɔː]*	[ʁ]*
ånder	ʌ̟	2	2		4		1	
f**o**rskellig		1	5	1		2		
nærmer**e**		5				3		1

Table 32. Targets [ʊ̟] and [ʌ̟] by the R-group

		+	[ɔ]*	[ʊ̞]*	[o]*	[ɵ]*
st**o**rm	ʊ̟	5			4	
b**o**rgmester		6	3			
k**o**rrupt		1	1	1	7	
k**o**rrektur		2	3		3	1

Target words	t/s	+	[o]*	[ɔ]*	[ʊ̞]*	[ə]*	[ɵ] *	[e]*	[ʁ]*
ånder	ʌ̟	3	1	2	3		1		
f**o**rskellig		3	1	2		2			1
nærmer**e**		4				4		1	

Table 33. Targets [ʊ̟] and [ʌ̟] by the D-group

As far as [ʊ̟] and [ʌ̟] are concerned, the results of the error analysis for these targets are quite varied. See **Tables 32, 33**. In the stressed positions, 6 R-subjects and 4 D-subjects gave correct pronunciations of [ʊ̟] in ***storm*** (in this target word *stød* was neglected as was methodologically introduced in section 3). In the stressed position [ʊ̟] was pronounced as a less lowered [ɔ]*, while 4 D-subjects demonstrated a vivid equivalence classification by giving 4 cases of [o]*. The latter could be traced in the R-group only for the first pre-stressed

syllable. In the unstressed positions in ***borgmester*** altogether 12 correct variants were given first of all due to a wrong word stress assigned to the first syllable. Even though in both ***korrupt*** and ***korrektur*** the words stress was set correctly, no vivid evidence in support of any weakening could be traced for this vowel segment, except for the already-mentioned feature to produce it as either a more open [ɔ]* or like [o]*.

A much more non-native like performance was shown for the words with [ʌ̣] as a target sound with 5 correct varinats in the stressed position in ***ånder***. The R-subjects mispronounced it in the stressed position as either [ɒ̣]* or [o]*, while the D-subjects produced also 3 lowered [ɒ̣]* and 1 close-mid [ɵ]*. This vowel segment was exposed to a qualitative reduction in both groups: in ***forskellig*** the unstressed [ʌ̣] was reduced to the neutral [ə]* all in all by four subjects but, not as a regular weakening pattern would require in Russian for the vowel [o]* in the first pre-stressed syllable, and also in ***nærmere*** to neutral [ə]* by a total of 7 subjects.

Thus, we can see that qualitatively the most native-likely produced back vowel in Russian speakers of Danish is [u]. Vowel [ǫ] is typically mispronounced as either [u]* or [o]*, where the latter is assumedly caused by both spelling interference and equivalence classification. Vowel [ɒ̣] is most often mispronounced as [u]* in the stressed positions and can be reduced to [ʊ]* in the pre-stressed ones. The two back vowel segments [ʌ̣] and [ɒ̣] are both subject to narrowing in the Russian foreign accent. The former one is most likely to be produced as either [ɒ̣]* or [o]*, whereas [ɒ̣] beyond [ɒ̣]* or [o]*, would be also produced as [ɔ]. On top of that, Russian natives, as the data showed tend to reduce [ʌ̣] to [ə]* in the pre-stressed and final post-tonic positions.

It is possible to conclude that in the case of the Danish back vowels, Russian learners tend to resort to the usage of the familiar sound inventory, namely back vowels [u] and [o], with a worse distinction of other back vowel qualities subject to narrowing.

5.3.1.1.2. Quantitative features

Target words	t/s	+	[u]*	[uˀ]*	[uˑ]*
m**u**ligvis **u**ge	uː	3 8	3	3	 1

		+	[ɒ̣ˑ]*	[ɔː]*	[oˑ]*	[oː]*	[ɒ̣ˑ]*
m**å**le	ɒ̣ː	4			2	2	1
st**or**me	ɒ̣ː	6	1	2			

Table 34. Targets [uː], [ɒ̣ː] and [ɒ̣ː] by the R-group

		+	[ʊ]*	[u]*	[uˑ]*
r**u**tine ak**u**punktur k**u**lde	u	8 8 8	1 1		 1
m**u**ligvis **u**ge	uː	1 2		6 7	2

		+	[ʏ]*	[ɵˑ]*	[ɔˑ]*	[ɔ]*	[ɔː]*	[ɒː]*	[ɒ]*	[ɒˑ]*	[oː]*	[o]*	[œː]*	[ɐ]*	[ɐˑ]*
m**å**le	ʏː	0	1	1	1		1		1	1	1	1	1		
st**or**me	ʏː	3			1	3								1	1

Table 35. Targets [uː], [ʏː] and [ʏː] by the D-group

In this section I shall discuss the results of the error analysis for the long [ʏː], [uː], and [ʏː]. See **Tables 34, 35**. These long vowel segments are also covered by the hypothesis about shortening of long vowels, and the collected data again serves to verify it.

Compared to [u] which was produced correctly by most of the subjects, the long [uː] scored only 14 out of possible 36 readings of together ***muligvis*** and ***uge***. It was primarily shortened to [u]* or [uˑ]* - twice as often in ***muligvis,*** than in ***uge.***

As for the sound [ʏː] (see **Tables 34, 35**), I have to admit that methodologically this vowel was set in a very favorable distribution compared to [u] in ***muligvis*** for instance. In the open syllable of ***måle*** it should have been less exposed to shortening conditioned that the subjects knew about the regularity of a long vowel in an open syllable. However, the error analysis showed the opposite. Two out of 9 R-subjects shortened [ʏː] to a half-long [oˑ]* and 1 to [ʏˑ]*. The D-subjects did not produce any correct pronunciations and gave seven shortened variants as [ʏ]*, [ɔˑ]*, [ɔ]*, [ɵˑ]*, [ɒ]*, [ɒˑ]* and [o]* - one of each respectively. Thus, quantitatively there *is* an evident feature of shortening a long vowel.

As was previously mentioned, the samples of the D-group are characterized by fewer correct productions of sounds in terms of the length of vowels. I argue for the fact that a weaker performance for the long vowels arises to the problem of a lacking pronunciation training focused on the opposition between long and short vowels. Therefore, [ʏː]-readings in target ***storme*** showed again, that the R-subjects (6 long variants) are better at preserving distinction between long and short vowel phonemes than the D-subjects (only 3 out of 9), because the training of the long vs. short opposition was one of the core aspects in SIPT.

5.3.1.3. Shortening of long vowels

Having analyzed the quantitative characteristics of all the vowel segments, I can conclude that my hypothesis about the shortening of long vowels proved to be consistent and correct, while the hypothesis about the lengthening of short vowels could not been substantiated, at least in the current research, because according to the error systematization, only very few examples of the long vowel shortening were collected (see **Figure 5**).

- ✓ *pande [ɑ̟ː]* (2)*
- ✓ *binde [iː]* (1)*
- ✓ *forbillede [iˑ]* (1)*
- ✓ *kysse [yˑ]* (1)*
- ✓ *ånder [ɒ̟ː]* (1)*
- ✓ *kulde [uˑ]* (1)*
- ✓ *kysse [ø̟ˑ]* (1)*
- ✓ *tørklæde [œ̟ː]* (1)*
- ✓ *ungdommelig [œˑ]*(4), [oˑ]* (1)*

Figure 5. Examples of the long vowel shortening as according to the error systematization

If we consider the number of all the lengthened variants in relation to all the 17 words with a long target vowel multiplied by 18 samples that would make 10 cases out of 306, i.e. 3.3%, which is methodologically very inconsiderable and cannot be used to verify the hypothesis.

5.3.1.3. Neutral [ə]

As was described in section 3.1.2., the Russian patterns of weakening vowels in the unstressed positions imply a Degree 2 reduction to [ə] of the phonemes /a/, /o/ and /ɛ/ in second pre-stressed syllables and all the post-tonic syllables. In this connection, the Danish neutral [ə] is not a new vowel quality for Russian native speakers even though in terms of phonotactics and phonological distribution, [ə]-occurrence in Danish may differ from that one in Russian.

For the reading materials, according to the pronunciation guidelines in Den Store Danske Ordbog, the following target words for the neutral [ə] were chosen: ***ganske*** (the final schwa after a consonant phoneme), ***bue*** (final schwa after a vowel phoneme) and ***doven***

(schwa in the final closed syllable after a sonorant consonant). It is necessary to admit that the recommended pronunciation taken as a point of departure for the error analysis was only relevant for the target word ***ganske***, while in ***bue*** and ***doven*** the presence of schwa is highly questionable in native speakers' pronunciations. Therefore, methodologically the choice of ***bue*** [ˌbuːˑ] and ***doven*** [dˌɔwn] was not to the point, thus it is only possible to make conclusions about [ə]-pronunciaiton in ***Ganske, where*** all the 18 subjects pronounced the target schwa correctly. See **Tables 36, 37**.

Target word	t/s	+
ganske	ə	9
bu(**e**) dov(**e**)n	methodologically invalid: all the R-subjects pronounced [ə]	

Table 36. Target [ə] by the R-group

Target word	t/s	+
ganske	ə	9
bu(**e**) dov(**e**)n	methodologically invalid; [ə]* (4), [ˀ]*(3), [i]* (1), [ɛˑ]* (1) in bue; [ə]* (5), [-] (4) in doven.	

Table 37. Target [ə] by the D-group

However, what was valuable in the readings of ***doven***, is that 4 out of 9 D-subjects reduced it to zero, as natives would do. None of the R-subjects pronounced the final syllable without [ə].

Such results of the error systematization can lead to the following conclusions. Firstly, the two groups had different guidelines while dealing with the neutral central [ə]. I found out that SIPT included [ə]-articulation in the R-group, and thus the R-subjects were aware of the [ə]'s typical distribution and occurrences, but they are still very dominated by the word's spelling, and therefore, gave the neutral [ə] triggered by the letter *e*, even in ***bue*** and ***doven***, where it would not be pronounced by native speakers. Whereas the D-group tend to be guided more by their exposure to native input, where [ə] can be exposed to different degrees of reduction depending on an individual speech rate or assimilation processes. This difference in the learning approach explains why the R-subjects pronounced [ə], where it would not be pronounced, while the D-subjects, who mostly learned it through imitation rather than explanation, tend to reduce it to zero as Danes do in a natural speech.

Thus, I can conclude that since [ə]-realizations are in real speech closely connected with the type of distribution and influenced by assimilation processes as well as individual properties of speech such as rate, for instance, foreign speakers of Danish may assimilate different strategies of [ə] production depending on the instruction input they receive.

Methodologically speaking, proceeding critically from the results of the data analysis I conclude that accent in [ə] should be studied in the framework of either a spontaneous speech task or reading tasks with a text reading, where [ə] would be in an environment close to that f a natural speech.

5.3.1.4. Diphthong features

The WL2 included words with the following target rising [jä], [ju], [jy], [jạ] and falling [œ̯w], [yw], [ew], [ø̯w], [e̯w], [iw], [øw], [uj/i̯], [äj], [ʌ̯j], [ɛj], [äw/äu̯], [iɐ̯], [ɛɐ̯], [eɐ̯], [yɐ̯], [øɐ̯], [œɐ̯], [uɐ̯], [o̯ɐ̯], [œɐ̯] diphthongs. The error analysis showed that the Russian foreign accent features in the pronunciation of diphthong go beyond the predicted monophthongization, consonantization of a diphthong's glide, and include a nucleus qualitative replacement.

5.3.1.4.1. Consonantization of the glide

The consonantization of a glide was typical of [w]-diphthongs and [ɐ̯]-dithphongs. In the examples below from the samples read by the R- and D-subjects we can see that semivowels [w] and [ɐ̯] are produced as if they were full consonants qualities of the phonemes /r/ and /v/.

- *[w]-diphthongs*

in ***tyveri*** as [yv]* (4);
in ***evnesvag*** as [ɛv/ ɛ^{v}]* (6);
in ***peber*** with [b]*- or [b̥]*-glide;
in ***øvre*** as [øv]* (2) or [œv]* (1);
in ***automatisk*** as [äɣ]* (1);

- *[e̯]dithphongs:*

in ***kørsel*** and ***ørred*** as [œ̞e̯]* (5), [øe̯]* (2), [œe̯]* (1), [œe̯]* (3);
in ***urbanisere*** as [ʊe̯]* (2).

5.3.1.4.2. Nucleus replacement

The nucleus replacement as a feature can be defined as a change of the diphthong's prominent vowel's quality in either height or backness. Here are the most illustrative examples of this phenomenon:

- [jä] in ***kajak*** was produced as mostly as [ja]* (5);
- [œ̞w] in ***søvnløs*** was narrowed to [ɵə]* (1), [ɵw]* (3), [œw]* (1), [œ̞ᵘ̯]* (1), [ʏʏ]* (1) or [œ̞u̯]*(2); or pronounced with a more open nucleus vowel back e.g. [ɒw]*(1), [ow]* (1);
- [ew] in ***<u>evnesvag</u>*** was either narrowed as [iw]* (4) or opened to [ɛv/ɛᵛ]* (6); in ***jævnaldrende*** was opened to [æw]* (2), [aw]* (3) or [ɐw]* (1)***;***
- [ɔ̝w] in ***lovgivning*** was narrowed to [yv]* (3);
- [ɛj] in ***evnesv<u>ag</u>*** was opened to [aj]* (1), or back [ɐj]* (1);
- [ʌ̞j] in ***fløjet*** was narrowed to [ɤ̞j]* (1), [ɔj]* (5) or centralized to [ɯj]* (1).

5.3.1.4.3. Monophthongization

The error systematization showed that a number of subjects tend to convert diphthongs into monophthongs. Here are examples of monophthongization as a feature of the Russina pronunciation in Danish:

- [ju] in ***skjulte*** as [ʊ]* (1);
- [uj/i̯] in ***huje*** as [u]* (6);
- [ye̯] in ***dyrke*** as [ʊ]* (1), [y]* (4), [yː]* (2);
- [ue̯] in ***urbanisere*** as [u]* (4), [ʊ]* (10);
- [ɔ̝e̯] in ***bortfalde*** as [o̞]* (3), [o]* (13);
- [ie̯] in ***kirkelig*** as [i]* (3);

- [œɐ̯] in ***hjørne*** as [œ̞]* (8), [ɵ]* (2), [œ̞ː]* (6);
- [ɛj] in ***evnesvag*** as [ɐ]* (1), [ɛ]* (2);
- [äu] in ***automatisk*** as [ɔ]* (4);
- [ø̯w] in ***øvre*** as [œ]* (1);
- [ʌ̯j] in ***fløjet*** as [ɵʲ]* (4), [ɔ̯]* (1), [œ]* (1);
- [øɐ̯] in ***kørsel*** [øː]*(4), [œ̞]* (1), [ø̞]* (3), [œ]* (1).

What is typical of all the above-presented monophthongized diphthongs is that their nucleus remains more or less preserved while a less prominent semivowel component is omitted, or alternatively a whole diphthong is monophthongized into a new vowel quality as was the case in ***automatisk*** with [ɔ]* instead of [äu]. (The latter is assumedly the result of the third language transfer, namely from English into Danish, since all the four subjects who mispronounced [äu] as [ɔ]* are advanced English-speakers.) In some situations, this new vowel quality is lengthened, as was the case in ***kørsel*** with [ø̞ː]*.

Thus, I substantiated the hypotheses about the monophthongization of diphthongs and consonantization of the glide, but have to admit that these two are not the only features of the Russian accent, but should be considered as a property of the Russian foreign accent together with the qualitative replacement of the diphthong nucleus.

5.3.2. Consonant features

Proceeding from SLM's principle of equivalence classification, I earlier in section 3.2. formulated the hypotheses about the features of the pronunciation of consonants in the case of the Russian accent by means of the contrastive method, having compared two phonological systems, and predicted the following eventual realizations of the Russian accent in consonant segments:

- disaspiration of /p/, /t/, /k/;
- velarization of /l/;
- voicing of non-aspirated consonants /b/, /d/, /g/, also of the intervocalic [s].
- palatalization of /b/, /d/, /g/ especially before Danish front /i/, /ø/, /ɛ/, /y/ and /e/.
- dentalization of /d/, /s/, /t/ and /n/;
- /r/-assimilation to a thrilling /r/; "consonantization" of [ɐ̯];

- [t͡s]-overtone in the Danish /t/[16].

The results of the error systematization for segments [f] in ***flame, gaffel, falsk, film,*** [j] in ***jod***, [w/ʊ̯] in ***kniv, koge, brev*** and [i̯] ***dej kaj*** showed no evident foreign accent in these consonants in either groups of the participants. However, [ŋ] in ***banke, gange, bang*** was opposite to my hypothesis realized 3 times as [ŋk]* in ***bang*** and 5 times as [ŋg]* in ***gange.*** The fact that [ŋ] was mispronounced only by the D-subjects leads to the conclusion that this was most evidently due to lacking corrections or/and training of this sound in case of particular subjects, rather than due to any kind of spelling interference or equivalence classification.

The foreign accent in the pronunciation of all the rest target consonant segments had to a more or less considerable degree of regularities. I classified the typical features of the pronunciation of consonants in the following ones:

- disaspiration;
- voicing;
- assimilation to the Russian segment and dentalization;
- palatalization and velarization;
- other features.

5.3.2.1. Disaspiration

Target words	**t/s**	+	[p]*
piskefløde pa**p**ir	b̥ʰ	6 6	3 3

		+	[k]*	[kj]*	not read
kirsebær **økologi** **kone**	g̊ʰ	5 8 5	3 1 3	1	 1

Table 38. Targets [b̥ʰ], [g̊ʰ] by the R-group

[16] See section 3.3.

Target words	t/s	+	[b̥]*	[p]*
piskefløde pa**p**ir	b̥ʰ	4 2	1	4 7

		+	[k]*
kirsebær ø**k**ologi **k**one	g̊ʰ	5 6 8	4 3 1

Table 39. Targets [b̥ʰ], [g̊ʰ] by the D-group

Danish aspirated consonants [b̥ʰ] in ***piskefløde*** and ***papir,*** and [g̊ʰ] in ***kirsebær, økologi*** and ***kone*** were mispronounced by a series of subjects from both groups. See **Tables 38, 39**. In the whole, [b̥ʰ] was disaspirated in 50% of all the readings in the two target words (18 out of 36). It was disaspirated [p]*-likely, i.e. pronounced as the Russian hard [p]. Only one D-subject produced [b̥]* instead of [b̥ʰ]. The subjects from both groups showed a better performance for [g̊ʰ] in ***kirsebær, økologi,*** and ***kone,*** with 37 out of 54 possible correct variants: one target word ***kone*** was omitted by one subject, while in 13 cases [g̊ʰ] was read as [k]* and in 1 case – as [kʲ]* in ***kirsebær***, assumedly due to the front [i], which would require the palatalization of a preceding consonant in Russian.

Anyway, I can conclude that Russian native speakers tend not to aspirate [b̥ʰ] and [g̊ʰ]. The reason for that is twofold. On the one hand, the disapiration comes from the spelling interference – directly for the letter *k* and inter-language for the letter *p* (*n* in the Russian alphabet). As the result of spelling interference, *k* is realized as /k/ or /kʲ/ and *p* as /p/ or /pʲ/ (depending on the vowel distribution) due to the equivalence classification, since the Danish [b̥ʰ] and [g̊ʰ] are most similar to the Russian /k/, /kʲ/, /p/, /pʲ/.

One can draw a conclusion that from the very beginning of instruction Russian learners associate sounds [b̥ʰ] and [g̊ʰ] with the corresponding letters *p* and *k*, which is far from being true in many Danish words, where letters *p* and *k* are not syllable-initial and thus represent sounds [b̥] and [g̊] respectively. Even though learners may *be* aware of aspiration as a property of these two Danish sounds, they cannot automatize the aspiration even at an advance level, which may in its turn result in mistakes in minimal pairs.

Target words	t/s	+	[d̥͡s]*	[t]*	[ts]*
tøj		3			6
de**t**al**j**e	d̥͡s	5	1	1	2
ømtålelig		4			5

Table 40. Target [d̥͡s] by the R-group

Target words	t/s	+	[t]*	[t̪]*	[t̻]*	[t̺]*
tøj		2	5	1	1	
de**t**al**j**e	d̥͡s	3	1	4		1
øm**t**ålelig		2	5	2		

Table 41. Target [d̥͡s] by the D-group

As far as the aspirated sound [d̥͡s] is concerned (see **Tables 40, 41**), it was realized differently in the R- and D-groups. However, the features discovered in the samples of both gourps, verify the hypothesis about 1) the disaspiration of Danish /t/ and 2) a [ts]*-overtone, i.e. the replacement of [d̥͡s] with the most similar Russian affricate [ts]. The latter was typical of the R-group in ***tøj (6), detalje (2)*** and ***ømtålelig (5)***[17]**.** The former feature manifested itself in the D-samples as either [t]*, [t̪]*, [t̻]* or [t̺]*.

5.3.2.2. Voicing, assimilation and dentalization

I predicted that the opposition voiced vs. devoiced as an inseparable characteristic of the consonant phonological inventory in Russian, can be transferred into Danish. This hypothesis proved to be true regarding a series of Danish consonant segments. What is characteristic of this transfer is that it turned out to be many-folded, and manifested itself differently for different positions of Danish consonant segments in the target words. See **Tables 42, 43**.

Target words	t/s	+	[b]*	[p]*
bestemme		6	3	
ho**pp**e		8		1
skar**p**	b̥	9		
ondska**b**		7		2

		+	[k]*	[g]*	[-]*	[gʲ]*	[g̊ʰ]
gulv	g̊	4	1	4			

[17] Out of 9 possible.

be**g**ejstret		2		4	2	1	
s**k**inne		2	5				
fræ**k**		9					
gemme		6		1			2

Table 42. Targets [b̥], [g̊] by the R-group

Target words	**t/s**	+	[b]*	[p]*
bestemme	b̥	3	6	
ho**pp**e		6		3
skar**p**		4		5
ondska**b**		5		4

		+	[k]*	[g]*	[-]*	[ɣ]*	[gʲ]*
gulv		4		5			
be**g**ejstret		0		8	1		
s**k**inne	g̊	2	7				
fræ**k**		5	3			1	
gemme		4		3			2

Table 43. Targets [b̥], [g̊] by the D-group

In the initial position of the unstressed syllable in ***bestemme*** [b̥] was mispronounced as the voiced [b]* by 3 R-subjects and 6 D-subjects, assumedly as the result of equivalence classification since, [b] and [b̥] are both bilabial plosives. In ***hoppe, skarp*** and ***ondskab*** [b̥] was mispronounced as the most similar Russian bilabial voiceless [p]* in both groups. In ***hoppe*** [b̥] was mispronounced as the result of letter-to-sound correlations between Danish *p* and Russian sound [p]. Whereas in ***skarp*** and ***ondskab*** [p]* was predictable, because in Russian a final bilabial plosive would be always [p]. Considering that the Danish [b̥] is voiceless in the final position, this feature of the Russian pronunciation would hardly affect the comprehensibility. In ***hoppe*** the only possible origin of [p]* goes to the already-mentioned spelling interference. Thus, we can see that the mispronunciation of [b̥] can take different directions (voicing to [b] or assimilation (as the result of equivalence classification) to the Russian [p]) depending on both position of the sound and the corresponding letter representing this segment.

Another consonant segment (see **Tables 42, 43**) that was voiced in the syllable-initial position, and assimilated to the most similar Russian sound [k] after *s* and in the syllable-final position, is [g̊]. It was mispronounced as [g]* (25 out of possible 54) in ***gulv, begejstret*** and ***gemme;*** as [k]* (15 out of possible 36) in ***skinne*** and ***fræk*** respectively.

Complicated features characterize the pronunciation of [d̥]. See **Tables 44, 45**. Here again we deal with the equivalence classification and spelling interference depending on the

position. In ***storm*** and ***sytten*** [d̥] was in the most favorable position[18] from the point of view of the pronunciation hints (after *s* and double *t*), and thus none of the R-subjects mispronounced it, while the D-subjects produced it in these two words as voiced alveolar [t]* (6) and dental [t̪]* (3).

Target words	**t/s**	+	[d̥s͡]*	[d̪ʲ]*	[d̪]*	[t]*	[ts͡]*
dum	d̥	**3**			5	1	
storm		**9**					
sy***tt***en		**9**		1			
dyne		**3**			5		
tidlig**t**		**3**	1			4	1

Table 44. Target [d̥] by the R-group

		+	[d]*	[d̥s͡]*	[-]*	[d̪]*	[d̪]*	[t]*	[t̪]*	[t̥]*
dum		**3**	1			3	2			
storm		**5**						2	2	
sy***tt***en	d̥	**4**						4	1	
dyne		**2**				5	2			
tidlig**t**		**2**		1	2			2	1	1

Table 45. Target [d̥] by the D-group

Dissimilar phenomena characterized the pronunciation of [d̥] in ***dum*** and ***dyne***, with the initial *d*. Being aware that [d̥] is a voiceless sound in Danish, one R-subject pronounced it as [t]* in ***dum*** as the result of hypercorrection, mentioned above. Whereas the majority of the participants voiced it to the alveolar [d̪]*(8), dental [d̪]* (14), [d̪ʲ]* (1), or [d]* (1) – out of 36 possible native-like pronunciations. Here we see a clear feature of voicing before a vowel and dentalization analogously to the Russian [д].

In the final position in ***tidligt*** [d̥] was realized as [t]*, [d̥s͡]*, [ts͡]*, [t̥]*, [t̪]* or omitted. Thus, no clear regularity can be found so far for the final position except for saying that [d̥] in the final position would be most likely classified by Russians as a sound similar to /t/.

Target words	**t/s**	+	[s̪]*
pre**ss**e	s	9	
savne		5	4
fy**s**isk		9	
læ**s**e		3	

[18] Here I mean that learners of Danish are usually aware that *p, t, k* after after *s* or double *p, t,* or *k* are never pronounced with aspiration. This is one of the basic rules about aspiration traditionally explained to learners of Danish.

		+	[n̪]*	[nʲ]*
norsk		8	1	
ku**nd**e	n	9		
næste		8		1

Table 46. Targets [s], [n] by the R-group

Target words	**t/s**	+	[s̪]*	[z]*
pre**ss**e		6	3	
savne		5	4	
fy**s**isk	s	5	1	4
læ**s**e			2	2

		+	[n̪]*
norsk		5	4
ku**nd**e	n	6	3
næste		5	4

Table 47. Targets [s], [n] by the D-group

The voicing as a foreign accent feature is typical not only of the Russian natives' pronunciation of Danish segments [b̥], [d̥], [g̊] in a syllable-initial position. As the data analysis showed, the alveolar [s] in an intervocalic position can be also exposed to voicing as [z]* (see **Tables 46 47**), which does not exist as a phoneme in Danish and may only seldom occur as an alophone as the result of assimilation. Relying on the data, I argue however, that this feature of the Russian natives' pronunciation may vary from an individual to individual, and may be determined by a particular type of phonetic instruction. As is seen from the error systematization this feature was only typical of the D-subjects in ***læ̲se*** and ***fy̲sisk*** (2 and 4 [z]* respectively for each word). The voicing however was not however a major accent feature of [s]-articulation.

While the dentalization was an additional feature of [d̥]-articulation by the participants, it was a major one in the articulation of the Danish alveolar segments [s] and [n] (see **Tables 46, 47**). This accent feature fits into SLM, since these sounds have a certain degree of similarity with the Russian [s] and [n] and differ only in their place of articulation as was mentioned in the comparative study. In the R-group the dentalization was more typical of the [s]-targets in ***savne*** rather than of the [n]-targets - only 1 variant as [n̪]* in ***norsk.*** The

dentalization of [s] and [n] was a more vivid accent feature in the D-group: ***presse*** (3), ***savne*** (4), ***fysisk*** (1), ***læse*** (2); ***norsk*** (4), ***kunde*** (3), ***næste*** (4)[19].

5.3.2.3. Palatalization and velarization

As was mentioned in section 3, the phonological opposition palatalized vs. non-palatalized is a crucial characteristic of the Russian consonant inventory. It would be hardly possible to imagine the Russian accent without any transfer of this consonant feature. The analysis of the reading samples verified that the palatalization affects Danish consonants in the position *before* front vowels, as it was predicted in the contrastive study, but additionally to the hypothesis I also have evidence in support of the palatalization *after* a front vowel and before the foreign accent induced [ə]*. However, I cannot conclude that the palatalization manifested itself as a primary property of the Russian accent.

In both groups [h] in ***hemmelig*** was palatalized by an equal number of participants: in each group one subject mispronounced [h] as [x^j]* and two as [h^j]*. The sonorant segments [m], [n], [l] were also exposed to the palatalization, though the distribution of palatalization was uneven. Two R-subjects produced [m] as [m^j]* in ***menneske*** and one R-subject realized [n] as [n^j]* in ***næste*.** The liquid sonorant [l] was palatalized by some subjects from both groups: as [l^j]* in ***længe*** (3), ***bopæl*** (9), ***kulde*** (4)[20], while in ***lammekød*** it was velarazied as [ɬ]* analogously as it would be in Russian after /a/. Other not numerous cases of palatalization were realized in ***vække*** [v^j]* (4), ***gemme*** [g^j]* (2) and ***begejstret*** [g^j]* (2).[21]

In my hypothesis I predicted that the Russian accent would have the palatalization of /b/, /d/, /g/ especially before /i/, /ɛ/, /y/, /e/ in Danish. The data analysis showed that this assumption was right for /g/, but I should admit that also sonorant segments, as well as the voiced [v] and voiceless [h] may be palatalized.

[19] In this line, the results are given for 9 D-participants.
[20] Out of 18.
[21] [g^j]* in ***begejstret*** was due to the mispronunciation of [aj] as [ej]* which made the nucleus of the diphthong a front vowel.

5.3.2.4. Other consonant features

Target words	t/s	+	[ɹ]*	[ʀ]*	[ɣ]*	[ʱʷ]*	[ʔ]*	[ʁ]*
rigdom	ʱ	6				1	1	1
ris		7					1	1
be**r**edskab		8			1			
i**r**okeser		8		1				

		+	[ʱ]*	[ɹ]*	[-]*
bæ**r**	ɐ̯	9			
ki**r**ke		9			
mo**r**		8			1
ge**r**ne		9			

		+	[ʂ]*	[ç]*	[ʂ]*	[ʃ]*
sjov	ɕ	5		3	1	
chokolade		3		1	2	3

		+	[-]*
stri**d**e	ð̞ʸ	8	1
ma**d**		1	
he**dd**et		8	1
vaske**t**		9	

Table 48. Targets [ʱ], [ɐ̯], [ɕ], [ð̞ʸ] by the R-group

Target words	t/s	+	[ɹ]*	[ʀ]*	[ɾ]*	[ɾ]*	[ɣ]*	[-]*
rigdom	ʱ	4	2	1	1	1		
ris		6			2	1		
be**r**edskab		4			1	1	1	2
i**r**okeser		5			2	1		1

		+	[ʱ]*	[ɹ]*	[-]*	[ə]*
bæ**r**	ɐ̯	8				
ki**r**ke		5	1	1	2	
mo**r**		5			4	
ge**r**ne		5			3	

		+	[ʂ]*	[z]*	[ʂʲ]*	[sʲ]*	[sʲ]*	[ç]*	[ʂ]*	[tʃ]*	[ʃ]*
sjov	ɕ	2			1		2	3	1		
chokolade		6							1	1	1

			[ɻ]*	[lʲ]*	[j̥]*	[ð̞]*	[-]*	[l]*	[ᵑ̊]*	[t]*	[d̥]*
stri**d**e	ð̞ʸ	5	1		1	1	1				
ma**d**		6		1			1	1			
he**dd**et		7				1			1		
vaske**t**		3						1		4	1

Table 49. Targets [ʱ], [ɐ̯], [ɕ], [ð̞ʸ] by the D-group

In the error systematization, I met a difficulty of systematizing accent features typical of the collected reading samples for the targets [ɻ], [ɻ̪], [ð̞̬̰] and [ɕ], since their pronunciation (see **Tables 48, 49**) by the subjects differed considerably from the phonological phenomena I discussed above in connection with other consonant segments. If we analyze accent features for these sounds from the point of view of Flege's SLM model, we can see that they all fall into the category of dissimilar sounds except for the alveolar-palatal [ɕ], which is very similar to the Russian palatal [ɕː].

In accordance with this model, the Russian foreign accent would be less noticeable for [ɻ], [ɻ̪], [ð̞̬̰] – because all the subjects have a quite high level of the command – and more considerable for [ɕ]. However, this theoretical assumption turned out to be true only of the R-subjects. No evident accent of [ð̞̬̰] was found in the readings of ***stride, mad, heddet, vasket*** in this group (see **Table 48**)**.** The same could be concluded about the R-readings of ***bær, kirke, mor*** and ***gerne*** with [ɻ̪] as a target segment. The segment [ɻ] was realized by few R-subjects (7 out of 36 readings in the R-group) in ***rigdom*** and ***ris*** as [ɻ̞ʷ]*, [ʔ]* or [ʁ]*[22], as [ʀ]* in ***irokeser*** and as [ɣ]* in ***beredskab***. Thus, we can see that the scenario for [ɻ], [ɻ̪], [ð̞̬̰] in the framework of SLM model was relevant only for the R-subjects. Now let us discuss the results for these sounds in the D-group.

What is more interesting about [ɻ], [ɻ̪], [ð̞̬̰] in the D-group is that opposite to my prediction about the pronuonciation of the lateral [l]* instead of [ð̞̬̰], only 3 variants of [ð̞̬̰] as either [lʲ]* or [l]* were given by the D-subjects out of a total of 15 wrong variants of [ð̞̬̰] in ***stride, mad, heddet, vasket.*** No clear foreign accent regularity can be drawn from the data analysis except for a dialectal pronunciation of the final [ð̞̬̰] in ***vasket*** as either [t]*or [d̥]*.

My prediction about a more consonant-like pronunciation of [ɻ̪] could neither be verified (see **Tables 48, 49**), but is sooner falsified since the main foreign accent feature for [ɻ̪] was its omission rather than [ɻ]-like production in ***kirke, mor*** and ***fersken.*** On the contrary a less probable replacement by the hardly similar Russian thrilling [r]* (6) or [ʀ]* (1) proved to be a characteristic of [ɻ]-pronunciaiton in the D-group in ***rigdom, ris, beredskab, irokeser***.

The pronunciation of [ɕ] compared to those of [ɻ], [ɻ̪] and [ð̞̬̰] was not native-like in both groups. Since this segment is very similar to the Russian /ɕː/, it was mispronounced as

[22] If we consider that [ʁ] (fricative) and [ɻ] (approximant) are both uvular segments this would decrease the number of mispronounced variants to 5 out of 36.

[ç]* (7), [ʂ]* (5), [ʃ]* (4), [sj]* (2) or [tʃ]* (1). The latter two were assumedly produced as the result of spelling interference in ***sjov*** and ***chokolade***, while [ç]*, [ʂ]* [ʃ]* were given according to the equivalence classification.

Thus, due to the error systematizations done separately for the D- and R-groups I could trace different stages of the foreign accent in Danish learners for sounds [ɻ̩], [ʂ̍] and [ð̞̯̍]. It is possible to draw a conclusion that more frequent mispronunciations of dissimilar [ɻ̩], [ʂ̍] and [ð̞̯̍] by the D-participants advocate for their less advanced level of the Danish pronunciation for these three sounds, as Fledge's SLM model would account for that. However, the latter is not claimed but only suggested and needs to be tested in other tasks with more [ɻ̩], [ʂ̍] and [ð̞̯̍]-targets set in a more natural environment than isolated words.

5.3.4. Word stress features

5.3.4.1. Double primary word stress

From the error systematization below, we can easily see that the ignorance of the double primary stress in Danish was a major characteristic in both groups. See **Tables 50, 51**. In ***direkte*** and ***allerede*** the double primary stress was one of the options recommended as a standard variant along with the the combination of the main stress on the first syllable and the secondary stress (I included these words as targets for the double primary stress). However, the overwhelming majority of subjects produced none of the options correctly. Target words ***femogtredive*** and ***julefest*** were pronounced with the double primary stress by a total of 4 subjects and 6 subjects respectively.

direkte	[ˈd̥iˈɻ̩aɡ̊d̥ə] or	1	diˈrekte* (8)
	[ˈd̥iˌɻ̩aɡ̊d̥ə]	0	
allerede	[ˈa̤ləˈɻ̩eːð̞̯̍ə] or	0	alleˈrede* (7)
	[ˈa̤ləˌɻ̩eːð̞̯̍ə]	2	
femogtredive	[ˈfemˌˈd̥straðʲ̩və]	4	ˌfemogˈtredive* (4), ˈfemogˌtredive* (1)
julefest	[ˈjuləˈfesd̥]	3	ˈjuleˌfest* (4), ˈjulefest* (1), ˌjuleˈfest* (1)
bagefter	[ˈbɛˀjˈefd̥ˌ] or	2	ˌbagˈefter* (3)
	[ˈbɛˀjˌefd̥ˌ]	4	

Table 50. Double primary word stress in the R-group

direkte	[ˈd̥iˈʁa̤g̊d̥ə] or	0	diˈrekte* (8), ˌdiˈrekte* (1),
	[ˈd̥iˌʁa̤g̊d̥ə]	0	
allerede	[ˈa̤ləˈʁeːð̞ˬ̥ə] or	1	
	[ˈa̤ləˌʁeːð̞ˬ̥ə]	0	ˈallerede* (3), alleˈrede* (5)
femogtredive	[ˈfemʌˈd̥s͡traðˬ̥və]	0	ˌfemogˈtredive* (8), ˌfemogtreˈdive* (1)
julefest	[ˈjuləˈfesd̥]	3	ˈjuleˌfest* (6)
bagefter	[ˈbɛˀjˈefd̥ʌ] or	2	ˌbagˈefter* (5)
	[ˈbɛˀjˌefd̥ʌ]	2	

Table 51. Double primary secondary stress in the D-group

Such a poor performance can be ascribed to the absence in Russian of the double primary stress. A more Russian-like stress pattern *ta-ˈta-(ta)* for non-compound words was a major guideline in the realizations of ***direkte*** and ***allerede*** resulting in diˈrekte* (16) alleˈrede*[23] (12) with only one primary stress or with a correct primary stress on the first syllable of ˈallerede* (3), but omission of the secondary/second primary stress on the second syllable. The same was true of ***bagefter,*** which was produced as ˌbagˈefter* (8) according to the Russian pattern *ta-ˈta-(ta).*

Femogtredive and ***julefest*** were exposed to a different non-native like word stressassignment, namely the combination of a secondary and a primary stress or vice versa, thus the most typical variants were ˌfemogˈtredive* (12), and ˈjuleˌfest* (10)[24]. The subjects processed these words as compounds having one primary and one secondary stress, which was quite predictable because of their morphological properties.

5.3.4.2. Secondary stress in compound and non-compound words

Even though both Russian and Danish are stress-timed languages their stress patterns does not always work in the same way. As was mentioned in the comparative study the occurrence of secondary stress is one of the major distinctions between the two languages. The secondary stress in Russian is typical of long words, having the main stress more than three syllables away from the beginning of the word, not necessarily compounds. Thus, in

[23] The neglected secondary stress here can be aslo heard sometimes in Danish native speakers. It was however classified as *, since in Russian native speakers this would not sound native-like because of the syllable dynamics, which was not in the focus of the current study.
[24] See footnote 23.

Russian the secondary stress will be inherent to the beginning of the word, i.e. the first or the second stem/syllable (Avanesov, 1956). In Danish, especially in compound words the secondary stress is usually assigned to the stem/syllable(s) following the first syllable (Heger 1992), as is it the case in the target words ***ytringsfrihed, andetsprogspædagogik, barnevogn,*** and non-compound ***sårbar*** and ***barndom.***

The data analysis and error systematization showed (see **Tables 52, 53** below) that in the compounds with more than two stems Russian native speakers tend to "save" the primary stress for the last stem in the word as was the case with ***ytringsfrihed*** and ***andetsprogspædagogik***, while setting the secondary stress on the first stem(s). Another typical feature of the Russian accent that should be highlighted in connection with the secondary word stress is a mere ignoring of the latter, as was the case with ***barndom*** and ***eventyret.***

eventyret	[ˈeːvənˌd̪̊syɐ̯ˀəð̞̊]	1	evenˈtyret (8)
ytringsfrihed	[ˈyd̪̊ʁ̞eŋsˌfʁ̞ihəð̞̊]	3	ytˈringsˌfriˈhed* (2), ˌytringsˈfrihed* (3) ytˌringsˌfriˈhed* (1)
andetsprogs- pædagogik	[ˈan̪əð̞̊ˌsb̪ʁ̞ɒsbʰed̪̊a̤ð̞̊ˌg̊iˀg̊]	1	ˈandetˈsprogspædaˈgogisk* (2), ˌandetˌsprogspædaˈgogik* (3) ˈandetˌsprogspædaˈgogik* (1), ˌandetˌsprogspædagoˈgik* (1),
barnevogn	[ˈb̪̊äːnəˌvɒ̯wn]	9	ˈandetˌsprogspædaˈgoˌgik* (1)
sårbar	[ˈsɔ̯ːˌb̪̊ä]	9	
barndom	[ˈb̪̊äːnˌd̪̊a̤mˀ]	4	ˈbarndom* (5) [25]

Table 52. Secondary stress in compound and non-compound words in the R-group

eventyret	[ˈeːvənˌd̪̊syɐ̯ˀəð̞̊]	1	evenˈtyret*(7), eventyrˈet* (1)
ytringsfrihed	[ˈyd̪̊ʁ̞eŋsˌfʁ̞ihəð̞̊]	3	ytˈringsˌfriˈhed* (2), ˌytringsˈfrihed* (3) ytˌringsˌfriˈhed* (1)
andetsprogs- pædagogik	[ˈan̪əð̞̊ˌsb̪ʁ̞ɒsbʰed̪̊a̤ð̞̊ˌg̊iˀg̊]	1	ˈandetˈsprogspædaˈgogisk* (2), ˌandetˌsprogspædaˈgogik* (3) ˈandetˌsprogspædaˈgogik* (1), ˌandetˌsprogspædagoˈgik* (1),
barnevogn	[ˈb̪̊äːnəˌvɒ̯wn]	9	ˈandetˌsprogspædaˈgoˌgik* (1)
sårbar	[ˈsɔ̯ːˌb̪̊ä]	9	
barndom	[ˈb̪̊äːnˌd̪̊a̤mˀ]	3	ˈbarndom* (6)

Table 53. Secondary stress in compound and non-compound words in the D-group

[25] See footnote 23.

5.3.4.3. Broken word stress in prefixed words

In the contrastive study, I put forward the idea that Danish prefixed words would be a particular challenge for Russian speakers. However, it was methodologically impossible to predict what particular features would characterize word stress in prefixed words.

According to the data and error systematization (see **Tables 54, 55**), a general tendency in the word stress assignment in prefixed words can be defined as *a broken word stress*. This phenomenon can be obviously traced as the result of

- re-distribution of the stress from the root to the prefix or vice versa, or the assignment: e.g., *ˌuˈheld*, uˈheld*, ˌuˈkendt*, uˈkendt* , ˈukendt*, ˈumuligt*;*

- setting a secondary or a primary word stress on an unstressed prefix: e.g. *ˈbeˌarbejde*, ˌbeˈarbejde*, ˈbearbejde*, ˈbearˌbejde*, ˈmistænksom*, ˈuˌmuligt*, ˌuˈheldig*, ˈuˌheldig*, ˈuheld**[26].

uheldig	[uˈhelˀd̥i]	7	ˌuˈheldig* (1), ˈuˌheldig* (1)
uheld	[ˈuˌhelˀ]	4	ˌuˈheld* (2), uˈheld* (2), ˈuheld* (1)
mistanke	[ˈmisd̥͡säŋg̊ə]	2	misˈtanke* (7)
mistænksom	[misˈd̥͡seŋˌsʌmˀ]	9	
bearbejde	[b̥ɐ̯äˈb̥äjd̥ə]	0	beˈarbejde* (2), ˈbeˌarbejde* (1), ˌbeˈarbejde* (4), ˈbearbejde* (1), ˈbearˌbejde* (1)
ukendt	[ˈuˌg̊ʰend̥]	5	uˈkendt* (3), ˌuˈkendt* (1),
umuligt	[uˈmuˀlid̥]	9	

Table 54. Word stress in prefixed words in the R-group

uheldig	[uˈhelˀd̥i]	5	ˌuˈheldig* (1), ˈuˌheldig* (1), ˈuheldig (2)
uheld	[ˈuˌhelˀ]	4	ˌuˈheld* (2), ˈuheld* (2), uˈheld* (1)
mistanke	[ˈmisd̥͡säŋg̊ə]	3	misˈtanke* (6)
mistænksom	[misˈd̥͡seŋˌsʌmˀ]	6	ˈmistænksom* (2),ˈmisˌtænksom* (1)
bearbejde	[b̥ɐ̯äˈb̥äjd̥ə]	0	*1 not valid,* beˈarbejde* (2), ˈbeˌarbejde* (1) ˌbearˈbejde* (2)ˈbearˌbejde* (1), ˈbearbejde* (2)
ukendt	[ˈuˌg̊ʰend̥]	3	ˌuˈkendt* (3), uˈkendt* (2), ˈukendt* (1)
umuligt	[uˈmuˀlid̥]	5	ˈumuligt* (2), ˈuˌmuligt* (2)

Table 55. Word stress in prefixed words in the D-group

Thus, I verified the hypothesis about the double primary stress, which is typically either ignored or set in a word with two primary stresses, as if there were a secondary and main stress in this word. I also examined whether the secondary word stress is preserved in non-compound Danish words and may conclude that it was ignored by more than 50% of subjects

[26] See footnote 23.

in the study. As for the secondary stress in compound words, it is very likely to be moved to the last stem of a compound as the data showed. Finally, I narrowed my predictions about the word stress assinement in prefixed words to the phenomenon of *a broken word stress*. It should be noted, that I studied the features of word stress assignment in Danish by Russian native speakers only typical of a word pronunciation in an isolated position or a focus word in an utterance. As the error systematization showed, the described features were traceable in both groups of subjects. Further analysis can address the word stress assignment in word combinations and sentences, and the obtained results may serve as a basis for other studies of the Russian accent on suprasegmental levels.

6. Global accent rating

For the global accent assessment, for the methodological reasons described in section 2.3, I also chose a reading task. I applied the so-called paragraph-reading technique, according to Piske et al. (2001: 193) widely used in other accent rating experiments (e.g., Oyama, 1976; Neufeld, 1979, 1980; Tahta et al., 1981; Piper & Cansin, 1988; Thompson, 1991; Bongaerts et al., 1995; Moyer, 1999).

As was mentioned earlier in section 4.1.3, all 27 subjects were offered to read aloud a small passage from *"Skolegade 4"* (Sandal, 2005: 79) – see **Figure 6** – after they have read the WL1 and before reading the WL2. To be exact, I recorded 12 reading samples by subjects from the D-group and 15 samples in the R-group.

The above-resented D-vs.-R-taxonomy was an underlying characteristic of the whole experiment, which was aimed at investigating whether SIPT plays any accent-mitigating role in the case of Russian learners of Danish as either a second or a foreign language.

It should be noted that in the case of T-readings, the title was omitted by some participants, but this fact is considered to be a minor issue, since this would not affect the accent degree ratings.

Regler
"Da vi havde været i Japan i omkring et halv år, mødte jeg en hollandsk ingeniør der havde boet i Japan i mange år. Jeg fortalte ham om vores middagsinvitation. Han lyttede og kunne fortælle mig følgende: i Japan spiser man op. Hvis man har taget noget op på sin tallerken må man spise det.
Man kan ikke give gaver der ikke er pakket ind. En cd er ikke en passende gave. Det er f. eks. blomster eller chokolade.
Man går ikke ud i folks køkkener. Det er privat område, lige som soveværelser ofte er det i Danmark. Hvis det er sent og man bliver tilbudt en drink, siger man pænt nej tak."

Figure 6. Text for the global accent assessment

6.1. Rating procedure and rating method

All 27 samples of the text were exposed to the global accent rating by native speakers of Danish. Methodologically, the global accent rating experiment was based on the assessment of the subjects' accent in accordance with a 5-point rating scale:

1- *heavy accent;*

2- *considerable accent;*

3- *slight accent;*

4- *almost native-like;*

5- *native-like.*

Since from the methodological point of view it was impossible to predict prior to the rating results that any of the subjects would sound native-like and score the highest point for the accent degree, I had to record four native controls on an anonymous basis to make sure that native-like samples were included in the rating procedure. Native controls were three females and one male aged approximately 20-50.

The ratings were carried out by native raters for each T-sample. Technically speaking the accent assessment was carried out by means of filling in a special accent rating template (see **Appendix 16**). All the participants' personal numbers (PPNs) in the rating template were changed to numbers from 1 to 31 (27 samples and 4 controls), without using the previously introduced PPN-taxonomy (neither ***R*** *vs.* ***D,*** nor ***2*** *vs.* ***1*** (see section 4.2.2). The names of the audio files were also changed in the same way. Then all the *"new"* samples were shuffled in a way that would ensure an even representation of the D- and R-subjects at the beginning of the rating list as well as at the end of the latter. Thus, for instance, D5 was numbered as 10, D13 as 17, R4 as 19, etc. For the correspondences between the rating numbers and PPNs, see **Appendix 17.**

6.2. Raters

Eight raters aged 17-65 years took part in the experiment: 4 expert raters (with a linguistic background) and 4 non-expert raters (without special linguistic background). I have previously explained in section 2.2., why I decided to choose volunteer raters from two groups. Five females and three males volunteered to be raters. Three of eight raters live currently in Aarhus area, while other 5 raters live in Greater Copenhagen.

6.3. Results

Figure 7 shows rating results for the global accent degree assessments of samples from the R-group (*PPNs 1.1. - 1.15 on the orange field*) and the D-group (*PPNs 2.1.-2.8., 2.10.-2.13 on the green field*). I used an averaging technique to find out which group received higher scores. The R-group as experiment showed demonstrated a better performance in the reading task with an average of 2.17, while the D-group's average was slightly lower, namely 1.8. on the above-mentioned 5-point scale.

Initially, I considered the groups to be methodologically equal, mainly because in the case of the R-participants a longer instruction and SIPT would compensate for the D-group's advantage of living in a language environment where Danish is a dominating language. Thus, by default the D-subjects would assumedly have more chances to put their language skills in language practice with native speakers, mitigate their foreign accent by a larger native input exposure and an active use of Danish outside language schools.

The analysis of the questionnaires filled in by all the participants showed that there is a very solid ground to conclude that the R-group's higher scores should be first and foremost ascribed to foreign accent mitigating role of SIPT, and these results are consistent with those obtained previously in the field of foreign accent studies. I have a series of arguments in favor of the fact that other factors, such as the length of instruction and the age of L2 acquisition did not play any significant role, at least under the conditions of this experiment.

Firstly, the percentage of a regular L1 use (which is considered to be a significant factor determining the degree of a foreign accent (Piske et al. 2001) and which has been recently set into focus by, for instance, Flege et al. (1997), (1999b), should have lead us to opposite results, since all but one R-subjects almost never use Danish outside the classroom and do not have conversations with native speakers on a regular basis - as a consequence their average foreign global accent degree ratings should have been lower compared to that of the D-subjects, but they are *not*. Thus, for example subject D6 with a stated percentage of Danish in everyday use at work equal to 80% received an average of 1.5., while R3 with a zero percentage of Danish use outside classroom and 90% of Russian use, had an average score of 2.6.

PPN	Age & Sex	Number in rating sheet	ER1	ER2	ER3	ER4	N-ER 1	N-ER2	N-ER3	N-ER4	Average
1.1.	19 M	1	1	1	2	1	3	1	2	1	1.5
1.2.	21 M	6	1	2	3	3	2	2	4	3	2.5
1.3.	19 F	3	2	3	3	2	4	2	3	2	2.6
1.4.	19 F	19	2	2	2	4	3	1	2	2	2.3
1.5.	19 F	5	1	2	4	3	4	1	3	2	2.5
1.6.	21 F	13	1	2	2	4	3	2	3	1	2.3
1.7.	19 M	7	1	2	3	3	2	3	3	3	2.5
1.8.	21 F	20	1	1	2	3	1	1	1	1	1.4
1.9.	20 M	25	1	1	2	3	2	1	2	1	1.6
1.10.	22 F	4	1	1	2	2	3	2	3	2	2.0
1.11.	21 F	22	2	2	4	4	2	2	3	3	2.8
1.12.	21 F	12	1	2	2	4	2	1	2	3	2.1
1.13.	22 M	21	3	1	2	3	2	1	1	1	1.8
1.14.	22 F	8	1	2	3	3	4	2	2	2	2.4
1.15.	20 F	23	2	2	3	4	2	2	2	2	2.4
2.1.	31 M	31	1	1	2	1	3	1	2	1	1.5
2.2.	31 M	6	1	2	3	3	2	2	4	3	2.5
2.3.	27 F	24	1	1	2	3	1	1	2	1	1.5
2.4.	22 F	15	2	2	2	3	2	1	2	2	2.0
2.5	22 F	10	2	2	3	4	4	2	3	3	2.9
2.6	30 F	26	1	1	2	3	1	1	1	2	1.5
2.7	60 F	11	1	1	1	3	2	1	1	1	1.4
2.8	25 M	27	1	1	1	3	1	1	1	1	1.3
2.10	24 M	16	1	1	2	4	2	1	1	1	1.6
2.11	30 F	28	1	2	3	3	2	1	2	3	2.1
2.12	30 F	29	1	2	3	3	2	1	2	2	2.0
2.13	33 F	17	1	1	1	4	1	1	1	1	1.4
native control 1		9	5	5	5	5	5	5	5	5	5.0
native control 2		18	5	4	4	5	5	4	4	5	4.5
native control 3		30	5	5	5	5	5	5	5	5	5.0
native control 4		14	5	5	5	5	5	5	5	5	5.0

Figure 7. Results of the global accent degree ratings across all the 8 raters.
Abbreviations: PPN – participant's personal number; ER – expert rater; N-ER – non-expert rater.

Secondly, according to Piske et al. (2001) the length of instruction as one of the instructional "variables", was found by Flege & Fletcher (1992) to be a significant predictor

of the degree of L2 foreign accent, but accounted for only 5% of the variance in the foreign accent ratings obtained in experiment (Flege & Fletcher, 1992) with Spanish learners of English. Moreover, in some studies according to Piske et al. 2001: 200) "…a total amount of formal classroom training, was found to be inversely related to the L2 pronunciation accuracy". This means that a longer instruction in the case of the R-subjects (average of 31 months) compared to that of the D-subjects (average of 25 months) would hardly account for a higher average score in the accent degree rating. Vivid examples in support of a very inconsiderable role of the length of instruction as an accent factor are those of subjects D2 (average score – 2.5.; length of instruction – 17 months); and R13 (average score – 1.8.; length of instruction – 45 months), and vice versa D4 (average score – 2.0.; length of instruction – 30 months); and R7 (average score – 2.5.; length of instruction – 18 months).

Thirdly, according to the questionnaires all the subjects started learning Danish as adults after the age of 17-18 or even later as D7, who started learning Danish at the age of 58, (her scores however are none the worse than those of D13 who started at the age of 32), and consequently can be all regarded as late learners, thus minimizing to zero an early exposure to Danish as a decisive and advantageous factor.

Finally, the results obtained in the case-study on the global accent degree are consistent with other studies supporting a crucial role of an intensive phonetic training for late foreign and second language learners as an accent-mitigating factor. Thus, in Bongaerts et al. (1997)'s study the ratings received by late learners of English were comparable to those obtained for native speakers of English and according to Bongaerts et al. (1997), the latter was due to an intensive phonetic training in the perception and production of English sounds.

Another study carried out by Moyer (1999) provides evidence supporting a positive effect of the suprasegmental and segmental training for native English learners of German. "She found that those subjects who had received both, obtained ratings that were closer to the range of ratings obtained for native speakers of German" (Piske et al. 2001: 200).

In my case study, the R-subjects received, according to the information reported by professors of the Institute of Scandinavian Languages, Dutch and Finnish at Moscow State Linguistic University a special introductory phonetic training in both segmental and prosodic aspects of the Danish pronunciation prior to the main course of the Danish language studies. According to the questionnaires, this course lasted for 4 months with 10 academic hours of instruction per week, including phonetic training in the language laboratories of

approximately 3 academic hours per week. In other words, SIPT was of a quite intensive character. Relying on Missaglia (1999)'s study, a prosody-oriented phonetic training is more effective in improving pronunciation than a segment-oriented training. Therefore, I should admit that the R-subjects, who received a special training in both aspects, should have probably received higher scores.

Interestingly, according to the few comments given by the volunteer raters (only expert raters gave comments) on the R-subjects' elicitations in most cases the foreign accent manifested itself most vividly through either prosodic characteristics, such as intonation and phrasal stress, or segments, and only in fewer cases through both. For example:

- for R10: *"Lydene er rigtig gode, men trykfordelingen og intonationen driller".*
- for R8: *"Lydene er meget skæve, men trykfordelingen er faktisk OK".*
- for R13: *"Rigtig god intonation, men lydene forstyrrer lidt.".*
- for R1: *"Udtalen er god, men selve intonationen er særligt afslørende".'*
- for R11: *"Intonationen er næsten perfekt. Accenten er tydeligst i udtalen af "o" og "cd". God intonation."*

Such a tendency can be probably explained by the fact that even in advanced learners of Danish, automatization of pronunciation simultaneously on both segmental and susprasegmnetal levels, comes into force much later, if it does at all.

The comments on the D-subjects' reading samples addressed mainly the accent on the segmental level. Only two subjects received comments concerning their intonation.

- for D1: *"Lydene er simpelthen for uklare."*
- for D3: *"Accenten afsløres særligt i udtalen af "havde"."*
- for D4: *"Trykfordeling og intonation er gode og ville have givet 5 hvis ikke nogle af lydene forstyrrede. Endelserne bliver "slugt" ved få af ordene."*
- for D6: *"Intonation og trykfordeling forstyrrer. Derimod gør det faktisk ikke noget at hendes r'er er triller."*
- for D7: *"Svært ved at sige 'h' og 'ø'."*
- for D8: *"H'erne er ret forstyrrende. Speciel udtale af 'h'."*
- for D10: *"Trykfordeling og intonation er gode, men lydene er svære at kende. Speciel udtale af 'lyttede og 'følgende'."*
- for D13: *"Mange forstyrrende lyde."*

The latter can be assumedly ascribed to the D-subjects' larger exposure to native input and therefore a better performance in terms of prosody. The latter however is only an assumption and further research is needed to test this idea.

Among the most common remarks, concerning segments in both R-and D-samples were those related to the articulation of /h/. This tendency goes at first sight somewhat against my results of the study on the typical segmental features of Russian accent. I argue that a better performance of subjects in the production of target [h]-sounds in the reading task with the WL1 was due to the target word's isolated position when subjects did not have to be so concentrated on the suprasegmnetal level features of their pronunciation compared to the text reading.

All I all, I believe that in general neither of groups demonstrated an outstanding performance in the T-task, according to the scores assigned to the participants. However, two participants – R11 and D5 – have been assigned scores almost equal to 3 points, which correspond to "a slight accent" on the five-point scale. I argue that in the case of R11 this was probably due to R11's three-week stay in Denmark for the purpose of summer language course, when R11 had more exposure to a native input than other subjects from the R-group as well as due to the fact that R11, compared to other R-subjects have had approximately 5.5. hours of conversation with native speakers per month. As far as D5 is concerned, her higher than others' average scores can be assigned to the fact that, according to her questionnaire, she has had Danish as a language of instruction on a graduate-level for the last 6 months.

I have thus empirically, verified my hypothesis that SIPT plays an accent-mitigating role and argue that it would considerably improve an accent in late learners of Danish as a second language, if it is introduced before the first modules of the Danish language course (see **Appendix 24** for the module system applied in the field of the Danish language course for adult and young learners of Danish as a second language according to the Common European Language Framework). The latter is relevant at least in the case of later learners with Russian as L1. Further research is needed to find out SIPT's role in the global accent improvement in late learners of Danish with other L1s.

Final conclusions and discussions

The goal of this thesis was to answer two questions. The first question was the following:

1) What are the most typical foreign accent features in Russian native speakers with Danish as a foreign and second language on the segmental level and in the word stress assignment?

To answer the first question I used one of the methodological principles of accent studies most widely applied during the recent decades (Flege, 2002; Best et al. 2001; Flege et al., 1995; Flege 1981a; Ingram & Park, 1998; McAllister et al., 2002; Missaglia, 1999). I proceeded from more abstract predictions about how dissimilarities and similarities between Danish and Russian phonemic inventories can be reflected in the Russian accent. These predictions were formulated as the result of the contrastive analysis of the Danish and Russian phonemic inventories according to the theory of the distinctive phonological features, as well as the comparison of the distinctive aspects of word stress assignment in two languages.

All the hypotheses about the features of the Russian natives' pronunciation in Danish were tested empirically by means of the case-study. The case study included: 1) data collection in the form of recordings of the two word lists with target segments and word stress patterns read by 18 subjects; 2) error systematization and error analysis.

The error analysis was mainly based on two major theoretical assumptions. The first one was, according to Flege's theory of equivalence classification that Russian native speakers would tend to classify Danish sounds, which are similar to the Russian ones in terms of articulation, according to the categories and articulation properties of the corresponding Russian similar sounds. The second assumption was that the typical errors in pronunciation would be also the result of the spelling interference, "whereby the spelling of the word…" in L2 "…triggers a correspondence between…" an L2 spelling symbol "…and the pronunciation of the same symbol in the native language…" (Miglio & Fukazawa 2006: 4145). Both of these assumptions were empirically substantiated and the following conclusions can be made on the typical features of the Russian natives' foreign accent in Danish on the segmental level and on the level of word stress assignment.

The Russian natives tend to qualitatively reduce Danish vowel qualities [ɐ̯] to [ɐ]* or [ə]*; [ɛ] to [ə]*; [ɑ̈] to [ɐ]*. All these Danish vowels tend to be qualitatively reduced

according to the principles of the Russian weakening of vowels in the unstressed position, because the Russian natives tend to classify them as similar Russian vowel qualities. Remarkably, as it may seem, in some dissimilar vowels, the reduction was realized in compliance with the Danish principles of vowel weakening, as for instance, in the case of [y] to a front-mid allophone [ʏ]*.

The Russian natives' pronunciation in Danish is characterized by fewer quality distinctive properties of the back vowels. Those Danish vowel segments which are open-mid and close-mid – [o̞] and the advanced [o̟] respectively – tend to be mispronounced by the Russian native speakers as [u]* or more rarely as allophones of the Russian /o/, the latter is more typical of [o̞]. Thus, Russian learners tend to resort to the usage of the familiar sound inventory, namely [u] and [o] (according to the equivalence classification or as the result of spelling interference of the letters *u* and *o*), with a worse distinction of other back vowel qualities subject to narrowing. Danish words where vowel allophones are represented in spelling, by means of the letters also found in the Russian language (that *may* be or *are* used in the latter to represent a different vowel quality) mispronunciation will have a greater probability.

The Russian natives tend to shorten the Danish long vowels. However, the latter depends on the type of the instruction the learners receive, in the current study those subjects who had a special phonetic training with the focus on the distinction between long and short vowels performed better in the reading task for the long targets.

The non-syllabic elements [w] and [e̯] in Danish diphthongs can be consonantized as [v]* and [r]*/ [ɐ̯]* respectively. Danish diphthongs can be mispronounced as monophthongs, especially [e̯]-diphthongs.

The Russian native speakers tend not to aspirate segments [b̥ʰ] and [g̊ʰ]. The aspirated [d̥͡s] is either disaspirated as [t]*, [t̤]*, [t̰]* or [t̥]*, or is replaced by the similar Russian affricate [t͡s]*. The voiceless segments [b̥], [d̥] and [g̊] are voiced after a vowel; aslo [s] in an intervocalic position. The Russian natives tend to dentalize /d/, /s/, /t/ /n/.

The double primary stress is typically either ignored by the Russian natives or set in a word with two primary stresses, as if there were a secondary and main stress in this word. The secondary word stress is often ignored in non-compound words, and in compounds with more than two stems, the Russian native speakers tend to "save" the primary stress for the last stem in the word.

Methodologically speaking, these are the features, which I put forward as the result of the contrastive study. Thus, in general, the case study provided evidence in support of most of the predictions. The case study gave also grounds to figure out other typical features, which had not been predicted in the contrastive study. The latter gives credit to the error analysis made, in terms of the methodological value. Therefore, I have to *supplement* the features presented above with the following ones.

Russian advanced late learners of Danish in general tend to preserve the Danish vowel quality better in the stressed positions. However, the equivalence classification is also typical of the stressed vowels. The current study provided evidence, that the equivalence classification may be regarded as a two-sided phenomenon and therefore, can empirically extend Flege's idea by saying that not only *do* advanced L2 learners demonstrate a worse performance for the L2 sound (A), more similar to the corresponding L1 sound (B), they may also have a tendency to produce A instead of B, as is the case with the Danish [i] vs. [e̝] distinction in Russian learners. Additionally, the front labialized [ø̝] is often mispronounced as [y], especially under the influence of the spelling interference. Sounds [œ̝] and [ɐ̝] are generically susceptible to narrowing in terms of height to such qualities as [ø]*, [ɞ]*, [ʏ]* and [ɵ]* as well as a tongue retraction. The nucleus of the diphthong may be exposed to the same qualitative errors as the corresponding vowel quality. The error analysis also narrowed my predictions about the word stress assignment in prefixed words to the phenomenon of *a* broken word stress.

The error analysis, as the last step of the case study, also provided evidence that *falsifies* some of my hypotheses, or extends some of them. Thus, one of my hypotheses was that the Russians would palatalize /b/, /d/, /g/ especially before Danish front /i/, /ɛ/, /y/, /e/. The error analysis showed that this assumption was right for /g/, but I should admit that also sonorant segments, voiced [v] and voiceless [h] may be exposed to palatalization. I also have evidence in support of the palatalization *after* a front vowel and before [ə]*. However, I cannot conclude that the palatalization manifested itself as a primary property of the Russian accent.

In my contrastive study on the vowel inventories, I pointed out the phonemes /a/ and /ɛ/ and their allophones as major eventual targets for weakening in unstressed positions. The error analysis showed however, that this hypothesis could have been extended over other

vowel front and back qualities. Thus, front [e̞] in the pre-tonic syllable was usually reduced to [ɪ]*, just as the Russian [i] would be in the same position; [o̞] was exposed to [ʊ]*-weakening – typical of the Russian /u/ in the pre-tonic position.

The results of the error analysis also falsified my hypothesis about lengthening of the short vowels and about the velarization of /l/. Moreover, my prediction about a more consonant-like pronunciation of segment [ɐ̯] could neither be verified, but is sooner falsified since the main accent feature for [ɐ̯] was its omission rather than [ɐ̯]-like production**.**

As far as the reading task (the word lists readings) is concerned, it is possible to conclude that methodologically it met the goals of the thesis in terms of the segmental aspects of the Russian natives' pronunciation in Danish as well as the word stress assignment. However, it is not possible to exclude the fact that a spontaneous speech task or, for example an elicitation of the target sentences or words after a native speaker would highlight other features of the pronunciation in the target groups. Moreover, the reading task, as was already mentioned was not illustrative for the segment [ə], which should be rather studied in the framework of either a spontaneous speech production or reading tasks other than with isolated words.

It should be noted that the whole thesis was not aimed at doing a quantitative research on the statistical significance of the mentioned features and was of a qualitative, descriptive and phonetic character. Nor should it have assessed the consequences of these or those typical segmental and word stress features from the point of the language use. However, I believe that the set of the features typical of the Russian accent described and systematized in this thesis have a significant practical importance for the speakers of Danish as a foreign or second language with Russian as L1 and teachers of Danish. It may serve a basis or a guideline for the development of study materials for the Danish pronunciation on the segmental level, as well as help the Russian natives to tackle their weak points in pronunciation.

Even though I have argued in the thesis that the D-group (without SIPT) and the R-group (with SIPT) sometimes performed differently for the same target sounds, mainly because of the different phonetic instruction, the described features can be applied to both groups: learners who have studied Danish as a foreign language and a second language.

And finally, on the basis of the results of the thesis I can supplement the answer to the first question by saying that the discovered features provide evidence in support of Flege's

Speech Learning Model, because the number of cases of mispronunciation of the Danish segments which are mostly, but not totally similar to the Russian sounds, were more considerable than those of the dissimilar sounds.

The second question this thesis was to give an answer to was the following:

2) Can a special introductory phonetic training anticipating the main language course mitigate the degree of a global foreign accent in late native Russian learners of Danish compared to the role of the phonetic training integrated in the main course of studies?

As was stated in section 6.3., the results of the global accent ratings showed that the SIPT anticipating the main language course *does* mitigate the degree of a global foreign accent in late native Russian learners of Danish. The difference in the mean (the D-group average of 1.80, and the R-group average of 2.17) ratings in the two target groups is statistically significant. **Figure 8** shows the distribution of rating scores for the D-group (the red shape) and the R-group (the blue shape). The higher the overlap between the shapes is, the higher is the probability that the difference in the score distributions was random. This graphical representation was substantiated by a T-test, which assesses whether the means of the two target groups are statistically different from each other. See the calculation results in **Appendix 23**. The probability of the null hypothesis that SIPT does not play a foreign-accent mitigating role was estimated at 0.053 (**Figure 9**). This means, that the probability that the difference in mean scores obtained by the D- and R-groups (considering the conditions of the case study and the linguistic portraits of the subjects, and the fact that such factors as learning strategies and level of education were not taken into account) was random is 5.3%, which is statistically very low. In other words, the probability that SIPT plays an accent-mitigating role is 94.7% (considering the conditions of the case study), which is statistically very significant.

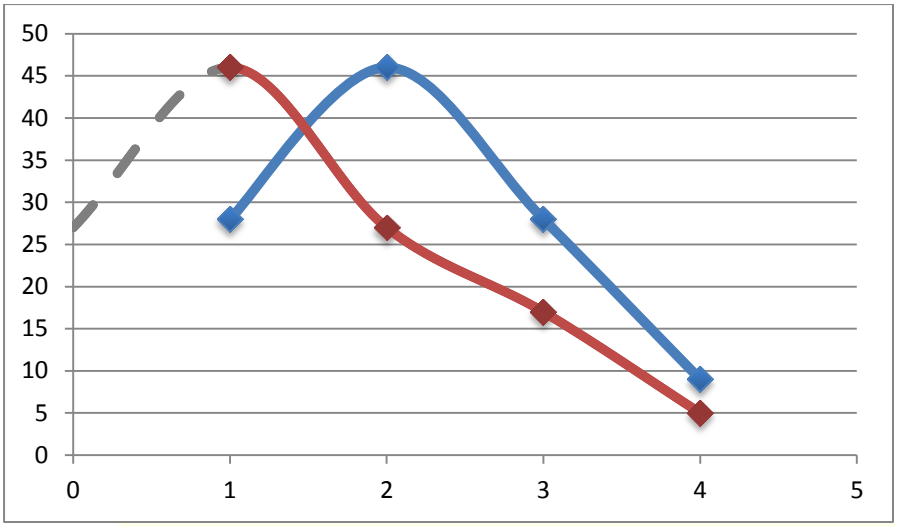
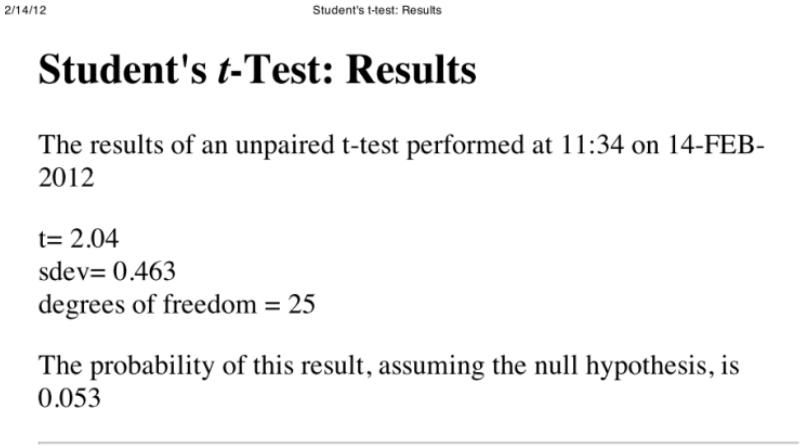


Figure 8. The distributions of scores for the D-group (in red) and the R-group (in blue).


2/14/12 Student's t-test: Results

Student's *t*-Test: Results

The results of an unpaired t-test performed at 11:34 on 14-FEB-2012

t= 2.04
sdev= 0.463
degrees of freedom = 25

The probability of this result, assuming the null hypothesis, is 0.053

Figure 9. The results of the t-Test

Generally speaking, I can conclude that SIPT as an initially advantageous factor in the R-group should have been supplemented with more practice of the Danish language use in conversations with native speakers as well as more exposure to native input through mass media, for instance, and other listening activities outside the classroom. The latter two, according to the questionnaires were R-group's weak points, presumably, as the consequence of studying Danish outside Denmark, and as the result or having fewer chances of having conversations with native speakers in a non-Danish language environment. The D-subjects who on the contrary have a more advantageous situation in terms of exposure to the native input, and have received pronunciation teaching as a part of everyday classroom activities,

but have not had SIPT could have demonstrated a better performance than the R-subjects if they had SIPT prior to the main language practice course.

No research is available today on whether a special phonetic training should precede the main language course or be integrated into it parallel to the main language course, but I argue that the best results would be obtained if SIPT took place before the main language course of Danish as a second language, since in that case the learning of new pronunciation patterns and the development of new articulation habits would anticipate the interference of the Russian language in the most effective way, and learners would be made aware and conscious of the differences between two phonological systems. The latter would create a solid basis for the automatization of new pronunciation habits and articulation in various language activities in the classroom and outside it.

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Appendices

Appendix 1. Questionnaire for subjects

Participant's personal number …

Age:
Sex: F M
Email:

1. When did you start learning Danish?
2. Did you learn/Are you learning (please, underline) Danish as a foreign (in Russia) /second (in Denmark) language?

As a foreign language	**As a second language**
3. How long have you been learning/did you learn Danish? 4. Have you ever lived/stayed in Denmark during your studies of Danish? 5. If yes, how long? 6. What was the purpose of your stay? 7. Where do you use Danish now?	3. How long have you been learning/did you learn Danish? 4. Did you use/Do you use Danish outside the language school? 5. If yes, how often? 6. For what purposes?

7. How many hours per week of class teaching did you have/do you have on average?
8. Is/(Are) your teacher(s) a Danish native speaker (native speakers)?
9. How much time on average per month do you speak to native speakers?
10. Do you have any Danish next of kin?
11. How many hours per week do listen to native speakers, including TV, radio, music, online broadcastings, watching films? Please, specify the source!
12. Did you have a special phonetic training before you started the main course of the Danish language curriculum?
13. If yes, was it focused on: articulation of sounds/intonation/both?
14. If yes, how long did it take?
15. If yes, how often was it per week?
16. Was your Danish pronunciation training an integrated part of your curriculum when you started to learn Danish?
17. Are you motivated in learning to speak Danish native-like?
    Yes / No (underline, please)
18. Have you used Danish outside courses for the last year?
19. Do you use Danish more, than Russian? Please, indicate average relation in %.
20. Do you agree to take part in the presented study conditioned that your recordings will be used solely in the interest of and for the purpose of the current research project, and will not be disclosed to the research-unrelated persons?

    Signature

    Date

Appendix 2. Word List (WL1). Vowel and consonant segments

1. pande
2. dyne
3. kærlighed
4. utaknemmelig
5. badeværelse
6. mangle
7. fare
8. ondskab
9. sofa
10. rare
11. bestemme
12. hoppe
13. dum
14. skarp
15. kæresterere
16. storm
17. erkende
18. sytten
19. stride
20. gaffel
21. Kina
22. heddet
23. vasket
24. binde
25. apparat
26. bagage
27. panere
28. beslægtet
29. forbillede
30. alene
31. mad
32. sene
33. falsk
34. bue
35. doven
36. gemme
37. ganske
38. flamme
39. gulv
40. begejstret
41. skinne
42. hemmeligt
43. film
44. vilde
45. kaj
46. hummus
47. vikar
48. livlig
49. skrive
50. dej
51. jod
52. økologi
53. detalje
54. kirsebær
55. længe
56. bopæl
57. måske
58. kulde
59. lammekød
60. banke
61. smadre
62. kunde
63. næste
64. gange
65. god
66. gøre
67. menneske
68. bang
69. irokeser
70. boliviansk
71. skole
72. kone
73. piskefløde
74. korrektur
75. norsk
76. papir
77. rigdom
78. fræk
79. ris
80. bær
81. kirke
82. mor
83. presse
84. Lyngby
85. savne
86. ryge
87. chokolade
88. rutine
89. barsk
90. tøj
91. sjov
92. ømtålelig
93. muligvis
94. gerne
95. måle
96. akupunktur
97. vagt
98. kvota
99. havne
100. høne
101. kniv
102. koge
103. uge
104. korrupt
105. brev
106. tørklæde
107. munde
108. tidligt
109. fysiologi
110. vække
111. forskellig
112. trykke
113. beredskab
114. pædagog
115. nervøsitet
116. læse
117. fysisk
118. ungdommelig
119. kysse
120. købe
121. dreng
122. nødvendig
123. pædagogisk
124. smør
125. lukke
126. dromedar
127. borgmester
128. nærmere
129. storme

Appendix 3. Target vowel segments in WL1

Target words	Target segments
p**a**nde, p**a**nere, sof**a**	a̟
k**æ**rlighed, **e**rkende, k**æ**resterere,	ɛ
b**a**deværelse, bagg**a**ge,	ɛː
b**a**nke, ut**a**knemmelig, **a**pparat[27]	ä
f**a**re, r**a**re	äː
p**æ**dagog, p**æ**dagogisk, h**e**mmeligt	e
l**æ**se	eː
dr**e**ng	a
b**i**nde, b**e**slægtet, forb**i**llede	e̟
al**e**ne, s**e**ne	e̟ː
gansk(**e**)**,** bu(**e**)**,** dov(**e**)n[28]	ə
v**i**lde, v**i**kar, l**i**vlig	i
skr**i**ve, K**i**na	iː
g**o**d[29], ir**o**keser, b**o**liviansk	o̟
sk**o**le, k**o**ne	o̟ː
r**u**tine, ak**u**punktur [30], k**u**lde	u
m**u**ligvis, **u**ge	uː
f**y**sisk, f**y**siologi, lyngb**y**	y
r**y**ge	yː
k**y**sse, n**ø**dvendig, nerv**ø**sitet	ø
k**ø**be	ø̟ː
h**ø**ne	œ̟ː
tr**y**kke, **ø**mtålelig, t**ø**rklæde	œ̟
sm**ø**r	œ̟
g**ø**re	œ̟ː
l**u**kke, **u**ngdommelig	ɔ̟
m**å**le	ɔ̟ː
b**o**rgmester, k**o**rrupt, k**o**rrektur	ɔ̟
st**o**rme	ɔ̟ː
ånder**,** f**o**rskellig, nærmer**e**	ʌ̟

[27] Most native speakers would reduce [ä] in the first pre-tonic syllable to either [ɐ] or [ə]. The targer segment in my analysis was the first [ä] – in the second pre-stressed syllable.
[28] While choosing the target words for [ə] I took the pronunciation recommended by *Den Store Danske Ordbog*. However, in a natural speech [ə] would be only pronounced in ***ganske.*** I return to this methodological issue in section 5.3.1.3.
[29] Here I do not take *stød* into consideration for methodological reasons mentioned in section 3.1.
[30] Here I took the second vowel [u] as a target segment
http://ordnet.dk/ddo/ordbog?query=akupunktur&search=S%C3%B8g

Appendix 4. Target consonant segments in WL1

target words	target segment
bestemme, ho**pp**e, skar**p,** ondska**b**	b̥
piskefløde, pa**p**ir	b̥ʰ
ha**v**ne, kni**v,** ko**g**e, bre**v**	w/u̯
flame, ga**ff**el, **f**alsk, **f**ilm	f
vække, **v**agt	v
dum, s**t**orm, sy***tt***en, **d**yne, tidlig**t**	d̥
tøj, de**t**alje, ømt**å**lelig	d̥͡s
hemmeligt, **h**ummus	h
jod	j
ka**j,** de**j**	j/i̯
længe, **l**ammekød, bopæ**l,** ku**ld**e	l
stri**d**e, ma**d,** he**dd**et, vaske**t**[31]	ð̯ˠ̞
måske, s**m**adre, **m**enneske	m
kirsebær, ø**k**ologi, **k**one	k
gulv, be**g**ejstret, s**k**inne, fræ**k, g**emme	g̊
ba**nk**e, ga**ng**e, ba**ng**	ŋ
norsk, ku**nd**e, **n**æste	n
pre**ss**e, **s**avne, fy**s**isk, læ**s**e	s
sjov, **ch**okolade	ɕ
rigdom, **r**is, be**r**edskab, i**r**okeser	ʁ̞

[31] In some regions of Denmark the final consonant would be [d̥], I took the Standard Copenhagen variant, as was mention in section 2.4. However, the regional variants of the pronunciation of this target word are discussed in section 5.3.2.4.

Appendix 5. Word list 2 (WL2). Words stress and diphthongs

1. billigst
2. eventyret
3. kvindelig
4. uheld
5. kajak
6. mistanke
7. sårbar
8. mistænksom
9. bearbejde
10. gebyr
11. ukendt
12. skjulte
13. grafik
14. søvnløs
15. violin
16. kritisere
17. jysk
18. uheldig
19. bilist
20. økonomisk
21. barndom
22. julefest
23. tyveri
24. umuligt
25. bagefter
26. jævnaldrende
27. femogtredive
28. ytringsfrihed
29. direkte
30. allerede
31. barnevogn
32. andetsprogspædagogik
33. lovgivning
34. evnesvag
35. peber
36. automatisk
37. drivhus
38. øvre
39. fløjet
40. dejlig
41. huje
42. kirkelig
43. Per
44. fersken
45. dyrke
46. kørsel
47. ørred
48. urbanisere
49. bortfalde
50. januar
51. hjørne

Appendix 6. Target words for the analysis of word stress assignment in WL2

Target word	Word stress
1. billigst	[ˈbilisd̥]
2. bilist	[biˈlisd̥]
3. kvindelig	[ˈg̊ʰvɐn(ə)li]
4. gebyr	[g̊ɐˈbyɐ̯]
5. eventyret	[ˈeːvənˌd̥syɐ̯ˀəð̞ˬ]
6. violin	[vioˌliˀn]
7. kritisere	[g̊ʰʁidi̥ˈsɐˀˌ]
8. økonomisk	[øg̊oˌˈnoˀmisg̊]
9. grafik	[g̊ʁäˈfig̊]
10. uheldig	[uˈhelˀd̥i]
11. uheld	[ˈuˌhelˀ]
12. mistanke	[ˈmisd̥säŋg̊ə]
13. mistænksom	[misˈd̥seŋˌsˌmˀ]
14. bearbejde	[b̥ɐ̯äˈb̥äjd̥ə]
15. bagefter	[ˈbɛˀ(j)ˈefd̥ˌ] or [ˈbɛˀ(j)ˌefd̥ˌ]
16. ukendt	[ˈuˌg̊ʰend̥]
17. umuligt	[uˈmuˀlid̥]

18. femogtredive	[ˈfemʌ̟ˈd̥͡strað̠ˠ̞və]
19. ytringsfrihed	[ˈyd̥ʁ̞eŋsˌfʁ̞ihəð̠ˠˀ̞]
20. andetsprogs-pædagogik	[ˈa̞n(ə)ð̠ˠ̞ˌsb̥ʁ̞o̞sb̥ʰed̥a̞g̊o̞ˌg̊ig̊]
21. barnevogn	[ˈb̥äːn(ə)ˌvɔ̞wn]
22. julefest	[ˈjul(ə)ˈfesd̥]
23. direkte	[ˈd̥iˈʁ̞ag̊d̥ə] or [ˈd̥iˌʁ̞ag̊d̥ə]
24. allerede	[ˈa̞l(ə)ˈʁ̞eːð̠ˠ̞ə] or [ˈa̞l(ə)ˌʁ̞eːð̠ˠ̞ə]
25. sårbar	[ˈsɔ̞ːˌb̥ä]
26. barndom	[ˈb̥äːnˌd̥ʌ̟mˀ]

Appendix 7. Target diphthongs in WL2

Target words	**Target diphthong**
1. ka**ja**k	[jä]
2. sk**ju**lte	[ju]
3. s**øv**nløs	[œ̞w]
4. **jy**sk	[jy]
5. t**yv**eri	[yw]
6. j**æv**naldrende 7. **ev**nesvag	[ew]
8. l**ov**givning	[ɔ̞w]
9. evnesv**ag**	[ɛj]
10. p**eb**er	[e̞w]
11. **au**tomatisk	[äu]
12. dr**iv**hus	[iw]
13. **øv**re	[ø̞w]
14. fl**øj**et	[ʌ̞j]
15. d**ej**lig	[äj]
16. h**uj**e	[uj/i̯]
17. k**ir**kelig	[iɐ̯]
18. P**er**	[ɛɐ̯]
19. f**er**sken	[ɛɐ̯]
20. d**yr**ke	[yɐ̯]
21. k**ør**sel	[ø̞ɐ̯]
22. **ør**red	[œ̞ɐ̯]
23. **ur**banisere	[uɐ̯]
24. b**or**tfalde	[ɔ̞ɐ̯]
25. **ja**nuar	[ja̞]
26. h**jø**rne	[œ̞ɐ̯]

Appendix 8. Transcription results for the vowel targets in the R-group

Target words		+	[a]*	[e]*	[ɛ]*	[ɐ]*	[ə]*	[ạː]*	[ạ]*	[ɐ]*	[ä]*	[eː]*	[ʌː]*	[ă]*
p**a**nde p**a**nere sof**a**	ạ	6 4 3	1 3			2 4	2	2						
k**æ**rlighed **e**rkende k**æ**resterere	ɛ	9 4 3		4 6			1							
b**a**deværelse bag**a**ge	ɛː	2 4	1	1	6 2							1	1	
m**a**ngle ut**a**knemmelig **a**pparat	ä	8 4 4				5 5								1
f**a**re r**a**re	äː	8 5	1								4			
		+	[ɪ]*	[e]*	[-]*	[ɛ]*	[eˑ]*							
p**æ**dagog, p**æ**dagogisk hemmeligt	e	**8** **8** **6**	1 1			3								
l**æ**se	eː	8					1							
dr**e**ng	a	5		3		1								
		+	[i]*	[iː]*	[ęː]*	[ɪ]*	a[i]* b[iː]*	[iˑ]*	[ę]*					
b**i**nde b**e**slægtet forb**i**llede	ę	2 2 2	6 5	1		7 1		1						
al**e**ne s**e**ne	ęː	2 1	2	6 5				1 1						
gansk**e**	ə	**9**												
bu**e** dov**e**n	not valid methodologically: all the R-subjects pronounced invalid target [ə]													
vilde **v**ikar l**i**vlig	i	3 8 9				1			6					
skr**i**ve K**i**na	iː	7 7	2				1a	1						
		+	[o]*	[u]*	[uː]*	[ɔ]*	[ǫ]*	[oː]*						
g**o**d ir**o**keser b**o**liviansk	ǫ	5 3 2	5 7	4		1								
sk**o**le k**o**ne	ǫː	2 1		1 2	5 5		1	1						

		+	[ʊ]*	[u]*	[uʲ]*	[yˑ]*	[uː]*	[ʏ]*	[ɪ]*	[uˑ]*				
r**u**tine ak**u**punktur k**u**lde	u	5 6 8	4 3				1							
m**u**ligvis **u**ge	uː	3 8		3	3					1				
f**y**sisk f**y**siologi Lyngb**y**	y	9 9 9												
r**y**ge	yː	5		1		1	1	1						
		+	[øˑ]*	[y]*	[ø̯]*	[yː]*	[ø] *	[ɜ]*	[ɘ]*	[yˑ]*	[ə]*	[ʊ] *	[ɵ]*	[œ]*
k**y**sse n**ø**dvendig n**e**rv**ø**sitet *one failed*	ø̯	2 9 6	1	5				2		1				
k**ø**be	øː	3	1	2	2	1								
tr**y**kke **ø**mtålelig t**ø**rklæde	œ̯	0 0 7		9			2		2		3	1	1	2
		+	[œ̯]*	[œˑ]*	[œ]*	[œː]*	[ɐ̯] *	[ɘ]*	[ɵ]*	[œˑ]*	[ʏː]*	[ʉ]*	[øː]*	
h**ø**ne	œː	2	2	1							1	1	2	
sm**ø**r	œ̯	7			1				1					
g**ø**re	œː	6					3							
		+	[u]*	[ʊ̯]*	[ʏ]*	[oː]*	[ʊ]*	[ɔ]*	[ɒ̯]*	[ɒˑ]*	[ə]*	[ʉ]*	[ɒː]*	[ø̯]*
l**u**kke **u**ngdommelig	ɔ̯	0 0	7 2	1	1		6		1					
		+	[ɔ̯]*	[ɔˑ]*	[ɔ]*	[ɔː]*	[ɔ̯ː]*	[ɒ̯]*	[oˑ]*	[oː]*	[o]*	[ɐ]*	[ɔ̯]*	a[ɔˑ]* b [ɵ]*
m**å**le	ɔː	4							2	2				1a
storme b**or**gmester k**o**rrupt k**o**rrektur	ɒ̯	6 6 0 6			3 1 3			2 1			7	1		
st**or**me	ɔː	6		1		2								
		+	[o]*	[ɔ]*	[ɔ̯]*	[ə]*	[œː]*	[ɵ] *	[ɔ̯ː]*	[ɐ]*				
ånd**er** f**o**rskellig nærmer**e**	ʌ̯	2 1 5	2 5	1	4	2 3			1	1				

Appendix 9. Transcription results for the vowel targets in the D-group

Target words	t/s	+	[a]*	[e]*	[ɛ]*	[ɐ]*	[ə]*	[ą:]*	[ą]*	[ɐ]*	[ɑ̈]*	[a:]*	[ą:]*	[ɑ̃]*
p**a**nde p**a**nere sof**a**	ą	8 2 1	1 1 1			3 6	3 1							
k**æ**rlighed erkende	ɛ	8 7		1			2							

k**æ**resterere		8		1										
b**a**deværelse bag**a**ge	ɛː	1 1	 4	1	3 1				4 1			1	1	
mangle ut**a**knemmelig **a**pparat	ä	5 5 5	3 2 2			2 1	 1		2					1
f**a**re r**a**re	äː	4 4	1 1		1			1	2 2		2			
		+												
			[ɪ]*	[e]*	[-]*	[ɛ]*	[eˑ]*	[ɛˑ]*	[i]*					
p**æ**dagog, p**æ**dagogisk h**e**mmeligt	e	**7** **9** **3**	1		1	 4			 2					
l**æ**se	eː	2		2		2	2	1						
dr**e**ng	a	6		1		2								
		+	[i]*	[iː]*	[ɐː]*	[ɪ]*	a[ɨ]* b[iː] *	[ɛ]*	[ɛˑ]*	[e]*	[ɐ̯]*	[iˑ]*	[ᵊ]*	[-]*
b**i**nde b**e**slægtet forb**i**llede	ɐ	2 0 5	7 2			6 2		3						
al**e**ne s**e**ne	ɐː	3 3	2 1	1 1		1		1	2	1	1	1		
ganske	ə	9												
bu**e** dov**e**n		methodologically invalid; [ə]* (4), [ᵊ]*(3), [i]* (1), [ɛˑ]* (1) in bue; [ə]* (5), [-] (4) in doven.												
vilde **v**ikar **l**ivlig	i	3 7 9				2					6			
skr**i**ve K**i**na	iː	 1 2	 6 6				1b					1		
		+	[o]*	[u]*	[ɔ]*	[ɒˑ]*	[ɒ̝]*	[oː]*	[œˑ]*	[ɵ]*	[oˑ]*			
g**o**d ir**o**keser b**o**liviansk	ɒ	2 0 1	6 7 7	1	 1 1									
sk**o**le k**o**ne	ɒː	0 1	3 2		1 1	3	1 1	1 1	 1	 1	 1			
		+	[ʊ]*	[u]*	[uˑ]*	[y]*	[uː]*	[ʏ]*	[ɪ]*					
r**u**tine ak**u**punktur k**u**lde	u	8 8 8	1 1		 1									
m**u**ligvis **u**ge	uː	1 2		6 7	2									
ysisk **y**siologi Lyngb**y**	y	8 6 7						 2	1 3					
r**y**ge	yː	1		1		4	1	2						

		+	[ø̞ˑ]*	[y]*	[ø̞]*	a[ɒ]* b[œ̞ː] *	[ø] *	[ɜ]*	[œ]*	[ɵ]*	[u]*	[ʊ] *	[ʏ]*	a[ɵ]* b[ʉ]*
k**y**sse n**ø**dvendig n**e**rv**ø**sitet	ø̞	3 7 6	1	5		1a	1	1	1	1				
k**ø**be	ø̞ː	4	2		3									
tr**y**kke **ø**mtålelig t**ø**rklæde	œ̞	0 2 5		6		1a 1b	2		1		1 1	1 1	1 1	 1a, 1b 1a
		+	[œ̞]*	[œ̞ˑ]*	[œ]*	[œː]*	[œ̝]*	[ɵ]*	[ɵ]*	[œˑ]*	[ɒ]*	[ɒˑ]*		
h**ø**ne	œ̞ː	3	2	2	1	1								
sm**ø**r	œ̞	3			4						1	1		
g**ø**re	œ̞ː	3			1		3		1	1				
		+	[u]*	[u̟]*	[ø̞]*	[oː]*	[ʊ]*	[ɔ]*	[ɒ̞]*	[ɒ̞ˑ]*	[ə]*	[ʉ]*		
l**u**kke **u**ngdommelig	ʉ̞	2 1	3 1	2	1		4	1	1	4	1	1		
		+	[ɔ̞]*	[ɔˑ]*	[ɔ]*	[ɔː]*	[ɒ̞ː]*	[ɒ̞]*	[ɒ̞ˑ]*	[oː]*	[o]*	[œː]*	[ɔ̞]*	a[ɔ̞ˑ]* b[ɵ]*
m**å**le	ɔ̞ː	0	1	1	1	1	1	1	1	1	1	1		
storm b**or**gmester k**o**rrupt k**o**rrektur	ɔ̞	5 6 1 2			3 1 3			1			4 7 3			 1b
st**or**me	ɔ̞ː	3		1	3								1	1a
		+	[o]*	[ɔ]*	[ɔ̞]*	[ə]*	[œ̞ː]*	[ɵ] *	[e]*	[ɐ]*				
ånd**er** forskellig nærmer**e**	ʌ̟ ɜ̟	3 3 4	1 1	2 2	3	2 4		1	1	1				

Appendix 10. Transcription results for the diphthong targets in the R-group

Target words	t/d	+	[ja]*	[ʊ]*	[ɵə]*	[ɵw]*	[œw]*	[œ̞ʉ]*	[yv]*
ka**ja**k	[jä]	8	1						
sk**ju**lte	[ju]			1					
s**øv**nløs	[œ̞w]	3			1	3	1	1	
jysk	[jy]	9							
t**yv**eri	[yw]	8							1
		+	[iw]*	[ɛv]*	[jə̞]*				
j**æv**naldrende **ev**nesvag	[ew]	9 3	3	2	1				
l**ov**givning	[ɔ̞w]	9							

		+	[aj]*	[ɛj]*					
evnesv**ag**	[ɛj]	7	1	1					
		+	[ɐːb]*	[iḭ]*	[iw]*	[ɐḭ]*	[ɔ]*		
p**eb**er	[ɐw]	3	1	3	1	1			
automatisk	[äu]	6					3		
		+							
dr**iv**hus	[iw]	9							
		+	[øv]*						
øvre	[øw]	7	2						
		+	[ɯj]*	[ɔj]*	[ɔ̰əj]*				
fl**øj**et	[ʌj]	2	1	5	1				
		+	[u]*						
d**ej**lig	[äj]	9							
h**uj**e	[uj/i̯]	7	2						
		+	[i]*	[eɐ̯]*	[eɐ̯]*	[fjɐ̯]*			
k**ir**kelig	[iɐ̯]	8	1						
P**er**	[ɛɐ̯]	7		2					
f**er**sken	[ɛɐ̯]	2			6	1			
		+	[ʊ]*	[y]*	[yː]*				
d**yr**ke	[yɐ̯]	6	1	1	1				
		+	[ø^{ɐ}]*	[œ̰]*	[ø̰]*	[œɐ̯]*	[øɐ̯]*	[œɐ̯]*	[œʔ]*
k**ør**sel	[øɐ̯]	2	5	1	1				
ørred	[œɐ̯]	0				3	2	3	1
		+	[u]*	[ʊ]*	[ʊɐ̯]*	[ɒ̰]*	[o]*		
urbanisere	[uɐ̯]	0	2	5	2				
b**or**tfalde	[ɔ̰ɐ̯]	1				2	6		
januar	[jạ]	9							
		+	[œ̰]*	[ɵ]*	[œ̰ː]*				
h**jø**rne	[œ̰ɐ̯]	2	5	1	1				

Appendix 11. Transcription results for the diphthong targets in the D-group

Target words	t/d	+	[ja]*	[jə]	[ɒw]*	[ow]*	[ʏʏ]*	[œ̟ʉ̯]*	[jʉ̯]*	[yʷ]*	[yv]*
ka**ja**k	[jɑ̈]	4	4	1							
sk**ju**lte	[ju]	9									
s**øv**nløs	[œ̟w]	4			1	1	1	2			
jysk	[jy]	9							1		
t**yv**eri	[yw]	5								1	3
		+	[aw]*	[æw]*	[eᵊ]*	[ɐw]*	[ɛv]*	[ɛʸ]*	[ow]*	[iw]	[yv]*
j**æv**naldrende **ev**nesvag	[ew]	2 **4**	3	2	1	1	3	1		1	
l**ov**givning	[o̟w]	6									3
		+	[ɐj]*	[ɛ]*	[ɛʲ]*	[ɛʲə]*	[ɐ]*				
evnesv**ag**	[ɛj]	2	1	2	1	2	1				
		+	[ɐ̟ː b]*	[ɛb̯]*	[ib̯]*	[ɐ̟b]*	[ɔ]*	[ɑ̈y̯]*	[ɐ̯u]*		
p**eb**er	[ɐ̟w]	3	1	3	1	1					
automatisk	[ɑ̈w]						1	1	1		
		+	[iʉ̯]	[ɛw]*							
dr**iv**hus	[iw]	7		2							
		+	[œv]*	[œ̟w]*	[ø̟ːw]*	[œ]*	[œw]*				
øvre	[ø̟w]	4	1	1	1	1	1				
		+	[ɵʲ]*	[o̟]*	[x̆j]*	[ʌ̟ʲ]*	[œ]*				
fl**øj**et	[ʌ̟j]	1	4	1	1	1	1				
		+	[u]*	[aj]*	[ʉ̯j]*						
dejlig	[ɑ̈j]	8		1							
h**uj**e	[uj/ɨ̟]	4	4		1						
		+	[i]*	[iə]*	[ɨə]*	[eɐ̯]*	[ɛɐ̯]*				
k**ir**kelig	[iɐ̯]	1	2	5	1						
P**er**	[ɛɐ̯]	7				2					
f**er**sken	[ɛɐ̯]	8					1				
		+	[yᵝ]*	[y]*	[yː]*						
d**yr**ke	[yɐ̯]	1	4	3	1						
		+	[ø̟ɐ̯]*	[œ]*	[ø̟]*	[œ̟ɐ̯]*	[œə]*	[œɤ̯]*	a[œʏ]* b[œ̟ə]*	[ø̟ː]*	[œɐ̯]*
k**ør**sel	[ø̟ɐ̯]	1	1	1	2					4	
ørred	[œ̟ɐ̯]	0				2	3	1	1a, 1b		1

		+	[u]*	[ʊ]*	[ʉ]*	[o̞]*	[o]*	[ja]*	[jɐ]*		
urbanisere	[uɐ̯]	1	2	5	1						
b**or**tfalde	[ɔɐ̯]	0				1	8				
januar	[jɑ̯]	3						4	2		
		+	[œ̞]*	[ɵ]*	[œ̞ː]*						
hj**ør**ne	[œɐ̯]	0	3	1	5						

Appendix 12. Transcription results for the consonant targets in the R-group

Target words	**t/s**	+	[b̥]*	[b̥ʰ]	[b]*	[w]*	[ɯ̟]*	[p]*	[vʲ]*	[ɯ̟j]*	[-]*	[ɯ̟]*	[vᶠ]	
bestemme ho**pp**e skar**p** ondska**b**	b̥	6 8 9 7			3			1 2						
piskefløde pa**p**ir	b̥ʰ	6 6						3 3						
ha**v**ne kni**v** ko**g**e bre**v**	w/ ɯ̟	9 9 9 9												
flame ga**ff**el **f**alsk **f**ilm	f	9 9 9 9												
vække **v**agt	v	5 9							4					
		+	[d]*	[d̥]*	[d̥s]*	[d̥ʲ]*	[d̥]*	[d̤]*	[t]*	[t̤]*	[t̥]*	[t͡s]*		
dum **s**torm sy**tt**en **d**yne tidlig**t**	d̥	**3** **9** **9** **3** **3**			 1	 1		5 5	1 4			 1		
tøj de**t**al**j**e ømtålelig	d̥s	3 5 4		1					1			6 2 5		
		+	[h]*	[x]*	[xʲ]*	[hʲ]*								
hemmeligt **h**ummus	h	7 9			1	2								

		+												
jod	j	9												
ka**j** de**j**	j/i̯	9 9												
		+	[ɬ]*	[lʲ]*										
længe **l**ammekød bopæ**l** **k**u**l**de	l	6 8 1 7	1	3 8 2										
		+	[ɾ̥]	[ɬ]*	[lʲ]*	[j̥]*	[ð̞]*	[-]*	[l]*	[t]	[d̥]			
stri**d**e ma**d** he**dd**et vaske**t**	ð̞ʏ̥	8 1 8 9						1 1						
		+	[mʲ]*											
måske s**m**adre **m**enneske		9 9 7	2											
		+	[k]*	[g]*	[-]*	[ʏ]*	[gʲ]*	[g̊ʰ]	[kʲ]*	0				
kirsebær **øk**ologi **k**one	g̊ʰ	5 8 5	3 1 3						1	 1				
gulv be**g**ejstret s**k**inne fræ**k** **g**emme	g̊	4 2 2 9 6	1 5	4 4 1	2		1	 2						
		+	[n̪]*	[ŋg]*	[ŋk]*	[nʲ]*								
ba**nk**e ga**ng**e ba**ng**	ŋ	9 9 9												
norsk ku**nd**e **n**æste	n	8 9 8	1			 1								
		+	[s̪]*	[z]*	[s̪ʲ]*	[sʲ]*	[sj]*	[ç]*	[s̪]*	[tʃ]*	[ʃ]*			
pre**ss**e **s**avne fy**s**isk læ**s**e	s	9 5 9 3	4											

sjov **ch**okolade	ɕ	5 3						3 1	1 2		3			
		+	[ɹ]*	[ʁ]*	[ɾ]*	[ɾ]*	[ɣ]*	[-]*	[ʁʸ]*	[ʔ]*	[ʁ]*			
rigdom **r**is be**r**edskab i**r**okeser	ʁ̟	6 7 8 8		 1			1		1	1 1	1 1			
		+	[ʁ̟]*	[ɹ]*	[-]*									
bæ**r** ki**r**ke mo**r** ge**r**ne	ʁ̞	9 9 8 9			1									

Appendix 13. Transcription results for the consonant targets in the D-group

Target words	**t/s**	+	[b̥]*	[b̥ʰ]	[b]*	[w]*	[u̯]*	[p]*	[v]*	[u̯j]*	[-]*	[u̯]*	[vᶠ]	
bestemme ho**pp**e skar**p** ondska**b**	b̥	3 6 4 5			6			3 5 4						
piskefløde, pa**p**ir	b̥ʰ	4 2	1					4 7						
ha**v**ne kni**v** ko**g**e bre**v** peber	w/ u̯	9 8 0 9							1	1	8			
flame ga**ff**el **f**alsk **f**ilm	f	9 9 9 9												
vække **v**agt	v	9 8											1	
		+	[d]*	[d̥]*	[d̥͡s]*	[-]*	[ɖ]*	[ɖ̥]*	[t]*	[t̪]*	[t̪]*	[t̪]*		
dum **st**orm sy**tt**en **d**yne tidlig**t**	d̥	**3** **5** **4** **2** **2**	1		 1	 2	3 5	2 2	 2 4 2	 2 1 1	 	 1		
tøj de**t**al**j**e ømt**å**lelig	d̥͡s	2 3 2							5 1 5	1 4 2	1	 1		

		+		[x]*										
hemmeligt hummus	h	7 6		2 3										
			[œ]*											
jod	j	**8**	1											
kaj dej	j/i̯	9 9												
		+	[ɬ]*	[lʲ]*										
længe **l**ammekød bopæ**l** **k**u**l**d**e**	l	6 6 8 7	3 3	 1 2										
			[ɾ̥]*	[ɬ]*	[lʲ]*	[j̥]*	[ð̥]*	[-]*	[l̥]*	[ᵑ̊]*	[t]*	[d̥]*		
stri**d**e ma**d** he**dd**et vaske**t**	ð̥ʸ̥	5 6 7 3	1		1	1	1 1	1 1	 1 1	 1	 4	 1		
		+												
måske s**m**adre **m**enneske		9 9 9												
		+	[k]*	[g]*	[-]*	[ʏ]*	[gʲ]*							
kirsebær ø**k**ologi **k**one	g̊ʰ	5 6 8	4 3 1											
gulv be**g**ejstret s**k**inne fræ**k** **g**emme	g̊	4 0 2 5 4	 7 3	5 8 3	 1	 1	 2							
		+	[ŋ̊]*	[ŋg]*	[ŋk]*									
ba**nk**e ga**ng**e ba**ng**	ŋ	9 4 6		5	 3									
norsk ku**nd**e **n**æste	n	5 6 5	4 3 4											

		+	[ʂ]*	[z]*	[ʂʲ]*	[sʲ]*	[sʲ]*	[ç]*	[ʂ]*	[tʃ]*	[ʃ]*			
savne fy**s**isk læ**s**e	s	6 5 5	3 4 1 2	4 2										
sjov **ch**okolade	ɕ	2 6			1		2	3	1 1	1	1			
		+	[ɹ]*	[ʁ]*	[r]*	[ɾ]*	[ɣ]*	[-]*						
rigdom **r**is be**r**edskab i**r**okeser	ʁ	4 6 4 5	2	1	1 2 1 2	1 1 1 1	1	2 1						
		+	[ʁ]*	[ɹ]*	[-]*	[ə]*								
bæ**r** ki**r**ke mo**r** ge**r**ne	ʁ̞	8 5 5 5	1	1	2 4 3									

Appendix 14. Transcription results for the word stress assignment in the R-group

Target word	Word stress	+	Word stress*
billigst	[ˈb̥ilisd̥]	8	biˈlist* (1)
bilist	[biˈlisd̥]	2	ˈbilist* (7)
kvindelig	[ˈg̊ʰvɐ̯nəli]	9	
gebyr	[g̊ɐ̯ˈb̥yʁ̞]	9	evenˈtyret (8)
eventyret	[ˈeːvənˌd̥s͡yɐ̯ˀəð̞ˠ]	1	
violin	[vioˌliˀn]	9	1 failed
kritisere	[g̊ʰʁ̞iɖiˈsɐ̯ˀʌ̯]	8	
økonomisk	[øg̊oˈnoˀmisg̊]	9	ˈgrafik* (1), ˈgrafisk* (1)
grafik	[g̊ʁ̞äˈfig̊]	7	
uheldig	[uˈhelˀd̥i]	7	ˌuˈheldig* (1), ˈuˌheldig* (1)
uheld	[ˈuˌhelˀ]	4	ˌuˈheld* (2), uˈheld* (2), ˈuheld* (1)
mistanke	[ˈmisd̥s͡äŋg̊ə]	2	misˈtanke* (7)
mistænksom	[misˈd̥s͡eŋˌsʌmˀ]	9	
bearbejde	[b̥ɐ̯äˈb̥äjd̥ə]	0	beˈarbejde* (2), ˈbeˌarbejde* (1), ˌbeˈarbejde* (4), ˈbearbejde* (1), ˈbearˌbejde* (1)
bagefter	[ˈbɛˀjˈefd̥ʌ] or [ˈbɛˀjˌefd̥ʌ]	2 4	ˌbagˈefter* (3)
ukendt	[ˈuˌg̊ʰend̥]	5	uˈkendt* (3), ˌuˈkendt* (1),
umuligt	[uˈmuˀlid̥]	9	
femogtredive	[ˈfemʌˈd̥stað̞ˠvə]	4	ˌfemogˈtredive* (4), ˈfemogˌtredive* (1)
ytringsfrihed	[ˈyd̥ʁ̞eŋsˌfʁ̞ihəð̞ˠ]	3	ytˈringsˌfriˈhed* (2), ˌytringsˈfrihed* (3) ytˌringsˌfriˈhed* (1)
andetsprogs-pædagogik	[ˈan̥əð̞ˠˌsb̥ʁ̞ɒsb̥ʰe d̥ʌg̊oˌg̊ig̊]	1	ˈandetˈsprogspædaˈgogisk* (2), ˌandetˌsprogspædaˈgogik* (3) ˈandetˌsprogspædaˈgogik* (1), ˌandetˌsprogspædagoˈgik* (1), ˈandetˌsprogspædaˈgoˌgik* (1)

barnevogn	[ˈbˌäːnəˌvˌɔwn]	9	
julefest	[ˈjuləˈfesˌd]	3	ˈjuleˌfest* (4), ˈjulefest* (1), ˈjuleˈfest* (1)
direkte	[ˈˌdiˈʁaˌgˌdə] or	1	diˈrekte* (8)
	[ˈˌdiˌʁaˌgˌdə]	0	
allerede	[ˈˌalə'ʁeːðˌˌə] or	0	allerede* (7)
	[ˈˌaləˌʁeːðˌˌə]	2	
sårbar	[ˈsˌɔː.ˌbä]	9	
barndom	[ˈbˌäːnˌdˌʌmˀ]	4	ˈbarndom* (5)

Appendix 15. Transcription results for the word stress assignment in the D-group

Target word	Word stress	+	Word stress*
billigst	[ˈbˌilisˌd]	8	biˈlist* (1)
bilist	[biˈlisˌd]	5	ˈbilist* (4)
kvindelig	[ˈgˌʰvˌenəli]	9	
gebyr	[gˌeˌˈbyˌɐ]	9	
eventyret	[ˈeːvənˌd͡syɐˀəðˌˌ]	1	evenˈtyret*(7), eventyrˈet* (1),
violin	[viˌoˈliˀn]	9	
kritisere	[gˌʰʁiˌdiˈseˌˀˌʌ]	9	
økonomisk	[øgˌoˈnoˀmisgˌ]	9	
grafik	[gˌʁäˈfiˌg]	6	ˈgrafik* (3),
uheldig	[uˈhelˀˌdi]	5	ˌuˈheldig* (1), ˈuˌheldig* (1), ˈuheldig (2)
uheld	[ˈuˌhelˀ]	4	ˌuˈheld* (2), ˈuheld* (2), uˈheld* (1)
mistanke	[ˈmisd͡säŋˌgə]	3	misˈtanke* (6)
mistænksom	[misˈd͡seŋˌsʌmˀ]	6	ˈmistænksom* (2),ˈmisˌtænksom* (1)
bearbejde	[bˌeˌäˈbˌäjˌdə]	0	1 not valid, beˈarbejde* (2), ˈbeˌarbejde* (1)
			ˌbearˈbejde* (2)ˈbearˌbejde* (1), ˈbearbejde* (2)
bagefter	[ˈbɛˀjˈefˌdʌ] or	2	ˌbagˈefter* (5)
	[ˈbɛˀjˌefˌdʌ]	2	
ukendt	[ˈuˌgʰenˌd]	3	ˌuˈkendt* (3), uˈkendt* (2), ˈukendt* (1)
umuligt	[uˈmuˀliˌd]	5	ˈumuligt* (2), ˈuˌmuligt* (2),
femogtredive	[ˈfemʌˈˌd͡straðˌˌvə]	0	ˌfemogˈtredive* (8), ˌfemogtreˈdive* (1)
ytringsfrihed	[ˈyˌdˌʁeŋsˌfˌʁihəðˌˌ]	4	ytˈringsfriˌhed* (2), ˌytringsˈfrihed* (1),
			ˈytringsfriˌhed* (1), yˈtringsˌfriˌhed* (1),
andetsprogs-pædagogik	[ˈˌanəðˌˌˌsbˌˌʁoˌsbˌʰeˌdˌaˌgˌoˌˌgiˌg]	0	ˈandetsprogspædagoˈgik* (),
			ˌandetˌsprogspædaˈgogik* (1),
			ˈandetˌsprogspæda˙gogik* (1),
			ˌandetˌsprogspædagoˈgik* (5),
			ˈandetˌsprogspædaˈgogik* (1)
barnevogn	[ˈbˌäːnəˌvˌɔwn]	8	ˈbarnevogn* (1)
julefest	[ˈjuləˈfesˌd]	3	ˈjuleˌfest* (6)
direkte	[ˈˌdiˈʁaˌgˌdə] or	0	diˈrekte* (8), ˌdiˈrekte* (1),
	[ˈˌdiˌʁaˌgˌdə]	0	
allerede	[ˈˌalə'ʁeːðˌˌə] or	1	
	[ˈˌaləˌʁeːðˌˌə]	0	ˈallerede* (3), alleˈrede* (5)
sårbar	[ˈsˌɔː.ˌbä]	9	
barndom	[ˈbˌäːnˌdˌʌmˀ]	3	ˈbarndom* (6)

Appendix 16. Global accent rating sheet

Subject's No	**Accent degree rating**	**Comments**
please, note, that a subject's number corresponds to the audio file	*please, give a point from the scale below* **1** - heavy accent **2** - considerable accent **3** - slight accent **4** - ***almost*** native-like **5** - native-like	
1		
…..		
31		

Appendix 17. Correspondence between PPNs and numbers in the global accent rating sheet

1.1.	1
1.2.	6
1.3.	3
1.4.	19
1.5.	5
1.6.	13
1.7.	7
1.8.	20
1.9.	25
1.10.	4
1.11.	22
1.12.	12
1.13.	21
1.14.	8
1.15	23
2.1.	31
2.2.	2
2.3.	24
2.4.	15
2.5.	10
2.6.	26
2.7.	11
2.8.	27
2.9. did not participate	
2.10.	16

2.11.	28
2.12.	29
2.13.	17
88	9
89	18
91	30
92	14

Appendix 18. Correspondence between transcription symbols in *IPA*, *Den Danske Ordborg* and *Dania*

IPA	Den Danske Ordbog http://ordnet.dk/ddo/	Dania
a̟	a	a
ɛ	æ	å
ɛː	æː	å·
ä	ɑ	ɑ
äː	ɑː	ɑ·
b̥	b	b
d̥	d	d
ð̞̊	ð	ð
e̟	e	e
e̟ː	eː	e·
ə	ə	ə
f	f	f
g̊	g	g
h	h	h
i	i	i
iː	iː	i·
j/i̯	j	j
j	j	j
g̊ʰ	k	k
l	l	l
m	m	m
n	n	n
ŋ	ŋ	ŋ
o̟	o	o
o̟ː	oː	o·
b̥ʰ	p	p
ʁ̟	ʁ	*r*
ɐ̯	ɐ̯	ɹ
s	s	s

ɕ	ɕ	ʂ
d̥͡s	t	t
u	u	u
uː	uː	uˑ
v	v	v
w/u̯	w	ɣ
y	y	yː
yː	yː	yˑ
e	ɛ	æ
eː	ɛː	æˑ
a	a	ä
ø̥	ø	ø
ø̥ː	øː	øˑ
œ̥	œ	ö
œ̥ː	œː	öˑ
œː	-----	ɔ̤ˑ
œ	-----	ɔ̤
ɶ̥	ɶ	ɔ̈
ɶ̥ː	ɶː	ɔ̈ˑ
ɔ̥	ɔ	å
ɔ̥ː	ɔː	åˑ
ɒ̥	ɒ	å
ɒ̥ː	ɒː	åˑ
ʌ̥	ʌ	ɔ

Appendix 19. Transcriptions of the vowel and consonant targets in the R-group

R 1	R 4	R 5	R 6	R 7
[pɻanə]	[pɻanə]	[pɻanə]	[paːnə]	[bʰɻanə]
[ˈd̥yːnə]	[ˈɖʲynə]	[ˈɖynə]	[ˈɖyːnə]	[ˈd̥yˑnə]
[ˈkɛɻliˌhəðɣ̞]	[ˈɡ̊ʰɛɻlʲiˌhɪðɣ̞]	[ˈɡ̊ʰɛɻliˌhɐðɣ̞]	[ˈɡ̊ʰɛɻliˌxʲɐðɣ̞]	[ˈɡ̊ʰɛɻliˌhɐðɣ̞]
[ˈut͡säɡ̊ˈɳemeli]	[ʊˈɖ͡sɐɡ̊nəmeli]	[uˈɖ͡säɡ̊knemeli]	[uɖ͡sɡ̊ɐkˈnemeli]	[uɖ͡säɡ̊ˈneməli]
[ˈb̥ɛðɣ̞ˌəˌvʲeɻlsə]	[ˈb̥ɛðɣ̞ˌəˌveɻlsə]	[ˈb̥eðɣ̞ˌəˌveɻlsə]	[ˌb̥ɛðɣ̞ˌəˈvʲelsə]	[ˈb̥ɛðɣ̞ˌəˌvɛɻlsə]
[ˈmɑ̃ŋlə]	[ˈmäŋlə]	[ˈmäŋlə]	[ˈmäŋlə]	[ˈmäŋlə]
[ˈfäːä]	[ˈfäːä]	[ˈfäː]	[ˈfäːə]	[ˈfäːɻə]
[ˈɵnsˌɡ̊ɛb̥]	[ˈɵnˌsɡ̊ɛp]	[ˈɵˀnˌsɡ̊ɛb̥]	[ˈɵnˌsɡ̊ɛb̥]	[ˈɵnsɡ̊əb̥]

[ˈsoᵘːfə]	[ˈʂoːfɐ]	[soˈfạ]	[ˈsofạ]	[ˈsɒːfə]
[ˈɻäː ɹə]	[ˈɻä]	[ˈɻäːä]	[ˈɻäə]	[ˈɻäːɻə]
[ɒɪˈsɖemə]	[bɪˈʂʈɛmə]	[ɒɪˈsɖemə]	[ɒɪˈsɖemə]	[ɒɪˈsɖɛmə]
[ˈhopə]	[ˈhɔɒə]	[ˈhʌɒə]	[ˈhoɒe]	[ˈhʌɒə]
[tuˀm]	[ɖum]	[ɖum]	[ɖum]	[ɖɒm]
[sɦäɒ]	[ʂɦʰäɒ]	[sɦäːɒ]	[sɦäːɒ]	[sɦäːɒ]
[keɐ̯sˈɖeɐ̯]	[ˈkʲeɐ̯ʂɖɪə]	[keʌ̯sˈɖiːʌ̯ʌ̯]	[ˈɦʰɛɐ̯sɖʌ̯ʌ̯]	[ˈɦʰeɻəsɖəɻeɻə]
[sɖɔˀm]	[sɖɔm]	[ʂɖɔm]	[sɖɔm]	[sɖɔˀm]
[eɐ̯ˈkentə]	[ˈeɐ̯ɦənə]	[ˈeɐ̯ɦənə]	[ɛɐ̯ˈɦʰenə]	[ˈɛɐ̯ɦənə]
[ˈsøɖn]	[ˈsʲyɖn]	[ˈʂyɖn]	[ˈsyɖən]	[ˈsyɖn]
[ˈsɖɻiːˈ!ə]	[ˈʂɖʔiðˠ ə]	[ˈsɖɻiðˠ ə]	[ˈsɻiðˠ ə]	[ˈsɖɻiːðˠ ə]
[ˈkäfəl]	[ˈɦafəl]	[ˈɦäfəl]	[ˈgäfəl]	[ˈɦäfəl]
[ˈkiːnạ]	[ˈɦʰiːnə]	[ˈɦʰiːnə]	[ˈɦʰiːnə]	[ˈɦʰiːnɐ]
[ˈheu̯]	[ˈhiðˠɐ̯ɖ]	[ˈhɐ̯ðˠəɖ]	[ˈxʲiðˠəɖ]	[ˈhɐ̯ðˠət]
[ˈvạsɦə ðˠ]	[ˈvạʂɦəðˠ]	[ˈvạsɦəðˠ]	[ˈvạsɦəðˠ]	[ˈvạsɦəðˠ]
[ˈɒinə]	[ˈbinə]	[ˈɒiːɳə]	[ˈbinə]	[ˈɒɐ̯nə]
[ɐɒäˈɻäˀɖ]	[ɐɒɐˈɻäɖ]	[äɒäˈɻäɖ]	[äɒäˈɻäɖ]	[äɒäˈɻäɖ]
[ɒɐˈɦɛːɛə]	[bɐˈɦɛːɛə]	[ɒɐˈɦɛɛə]	[bɐˈɦɛɛə]	[ɒɐˈɦʌːɛə]
[paˈn eạ]	[pạˈniə]	[pɐˈɳiə]	[paˈniəʌ̯]	[ɒʰɐˈnɐ̯ɻə]
[ɒɪˈʂleɦtəðˠ]	[bɪˈʂlʲeɦɖəðˠ]	[ɒɪˈʂleɦɖəðˠ]	[bɪˈslɛɦɖəðˠ]	[ɒɐ̯ˈsleɦɖəðˠ]
[fɔ̰ˈɒʲiləðˠ ə]	[foˈbʲiləðˠ ə]	[ˌfɔ̰ˈɒiˑləðˠ ə]	[fɔˈbiləðˠ ə]	[ˌfɔˈɒɐ̯ləðˠ ə]
[ɐˈliːnə]	[əˈlʲiːnə]	[ạˈliˑnə]	[ạˈliːnə]	[əˈliːnə]
[ˈmạ ðˠ]	[ˈmạðˠ]	[ˈmạðˠ]	[ˈmạ ðˠ]	[ˈmạðˠ]
[ˈsiːnə]	[ˈʂiːnə]	[ˈʂiˑɳə]	[ˈsiːnə]	[ˈʂiːnə]
[ˈfalsk]	[ˈfạlʂɦ]	[ˈfạlsɦ]	[ˈfạlsɦ]	[ˈfạlsɦ]
[ˈɒuə]	[ˈbuːə]	[ˈɒuˑə]	[ˈɒuːə]	[ˈɒuːə]
[ˈɖɔu̯ən]	[ˈɖɔu̯ən]	[ˈɖɔu̯ən]	[ˈɖɔu̯ən]	[ˈɖɔu̯ən]
[ˈɦemə]	[ˈɦemə]	[ˈɦemə]	[ˈgʲemə]	[ˈɦemə]
[ˈɦänskə]	[ˈɦạnsɦə]	[ˈɦansɦə]	[ˈɦʲạnsɦə]	[ˈɦʌnsɦə]
[ˈfläma]	[ˈfɬamə]	[ˈfläma]	[ˈfläma]	[ˈfläma]
[ˈkuˀl]	[ˈgulᶠ]	[ˈɦulʲ]	[ˈgul]	[ˈɦo̰l]
[bɪˈgäi̯sɖɻəðˠ]	[ˈbäi̯əˌʂɖʔəðˠ]	[bɪˈgäi̯ʂɖɻəðˠ]	[bɪˈgʲeiʂɖɻəðˠ]	[ˈɒäi̯əsɖɻəðˠ]
[ˈsɦinə]	[ˈʂɦʰẹnə]	[ˈʂkinə]	[ˈskinə]	[ˈsɦẹnə]
[ˈhɛmeliʈ]	[ˈheməlit]	[ˈhɛməlit]	[ˈhʲeməliɖ]	[ˈhɛməlit]
[ˈfiˀlm]	[ˈfilʲm]	[ˈfilm]	[ˈfilʲm]	[ˈfilm]
[ˈvilə]	[ˈvẹlə]	[ˈvilə]	[ˈvẹlə]	[ˈvẹlə]
[ˈɦʰ äi̯]	[ˈɦʰäi̯]	[ˈɦʰäi̯]	[ˈɦʰ äi̯]	[ˈɦʰäi̯]
[ˈhumus]	[ˈhumuʂ]	[ˈhumuʂ]	[ˈhumus]	[ˈhumus]
[viˈkäˀ]	[ˈvikɑ]	[ˈvikä]	[viˈɦʰɔ]	[ˈviɦʰa]

[ˈliu̯li]	[ˈlʲiu̯lʲi]	[ˈlʲiu̯lʲi]	[ˈlʲivlʲi]	[ˈliu̯li]
[ˈskʁ̞i:və]	[ˈsg̊ʁ̞i:və]	[ˈsg̊ʁ̞iˑvə]	[ˈsg̊ʁ̞i:və]	[ˈsg̊ʁ̞i:və]
[ˈd̥äi̯]	[ˈd̥ai̯	[ˈd̥äi̯]	[ˈäi̯]	[ˈd̥äi̯]
[ˈjou̯]	[ˈjuð̞ˠ̩]	[ˈjo̞ð̞ˠ̩]	[ˈjoð̞ˠ̩]	[ˈjo̞ð̞ˠ]
[øg̊ʰo̞lo̞ˈg̊iˀ]	[øg̊ʰəloˈgi]	[øko̞loˈg̊iˀ]	[øg̊ʰoɫoˈgi]	[øg̊ʰəlo̞ˈg̊iˀ]
[d̥ɪˈt͡sa̞ljə]	[dɪˈd͡sa̞ljə]	[dɪˈd͡sa̞ljə]	[dɪˈd͡sa̞ljə]	[d̥ɪd̥ɐlʲˈji]
[ˈkiɐ̯sə͵b̥ea̯]	[ˈg̊ʰisə͵bʲeɐ̯]	[ˈkis̯͵beɐ̯]	[ˈg̊ʰiɐ̯səb̥ɛɐ̯]	[ˈkiʔsə͵b̥eɐ̯]
[ˈleŋə]	[ˈlʲeŋgə]	[ˈleŋə]	[ˈleŋə]	[ˈleŋə]
[poˈpeˀlʲ]	[ˈb̥u͵pʲelʲ]	[ˈb̥u͵pelʲ]	[ˈbopəlʲ]	[ˈbo̞͵b̥ʰel]
[mɐˈs̺g̊iˀ]	[mo̞ˈsg̊ʰi]	[mo̞ˈsg̊e̞ˀ]	[mo̞ˈsg̊ə]	[mo̞ˈsg̊e̞ˀ]
[ˈg̊ʰu:lə]	[ˈg̊ʰulə]	[ˈkulʲe]	[ˈg̊ʰulə]	[ˈg̊ʰulə]
[ˈlämə͵køð̞ˠ]	[ˈlämə͵g̊ʰøð̞ˠ]	[ˈlämə͵køð̞ˠ]	[ˈla̞mə͵g̊ʰøð̞ˠ]	[ˈlämə͵g̊ʰøð̞ˠ]
[ˈb̥äŋkə]	[ˈbaŋkə]	[ˈb̥äŋkə]	[ˈb̥äŋg̊ə]	[ˈb̥äŋkə]
[ˈsmaʁ̞ə]	[ˈs̺ma̞ð̞ˠʕə]	[ˈsmað̞ˠ̩ʁ̞ə]	[ˈsmað̞ˠ̩ʁ̞ə]	[ˈsmäð̞ˠ̩ʁ̞ə]
[ˈkunə]	[ˈg̊ʰuˑnə]	[ˈg̊ʰo̞nə]	[ˈg̊ʰu:nə]	[ˈg̊ʰu:nə]
[ˈnesd̥ə]	[ˈnesd̥ə]	[ˈnʲesd̥ə]	[ˈnesd̥ə]	[ˈnesd̥ə]
[ˈg̊äŋə]	[ˈgäŋə]	[ˈg̊äŋə]	[ˈgäŋə]	[ˈgäŋə]
[ˈg̊uð̞ˠ̩]	[ˈguð̞ˠ̩]	[ˈg̊o̞ð̞]	[ˈguð̞ˠ]	[ˈgo̞ð̞ˠ̩ˀ]
[ˈg̊œ̞]	[ˈg̊œ̞:]	[ˈg̊œ̞ʌ̞]	[ˈg̊œ̞:]	[ˈgœ̞:]
[ˈmenəsg̊ə]	[ˈmenəs̺g̊ə]	[ˈmʲenəsg̊ə]	[ˈmenesg̊ə]	[ˈmenəsg̊ə]
[ˈb̥äŋ]	[ˈbäŋ]	[ˈb̥äŋ]	[ˈb̥äŋ]	[ˈb̥äŋ]
[iʁ̞oˈkʲesʌ]	[i͵ʁ̞okʲeˈsiˀʌ̞]	[iʁ̞okʲɪˈsiə]	[iʁ̞oˈkʲesʌ̞]	[iʀo̞ˈg̊ʰe̞sʌ̞]
[b̥oˈliviənsg̊]	[b̥oliviˈɛns̺g̊]	[ˈb̥o̞liviənsk]	[boliviˈɛnsg̊]	[b̥oˈliviɛnsg̊]
[ˈsg̊o̞:lə]	[ˈsg̊ʰu:lə]	[ˈsko̞lə]	[ˈsg̊u:lə]	[ˈsg̊o̞:lə]
[ˈg̊ʰo:nə]	[ˈg̊ʰu:nə]	[ˈg̊ʰunə]	[ˈg̊ʰu:nə]	[ˈg̊ʰo̞:nə]
[ˈpisg̊ə͵flø̞:ð̞ˠə̞]	[ˈpis̺g̊ə͵flø̞:ð̞ˠə̞]	[ˈb̥ʰiskə͵flø̞ð̞ˠə̞]	[͵b̥ʰisg̊əˈflø̞:ð̞ˠə̞]	[ˈb̥ʰisg̊ə͵flø̞:ð̞ˠə̞]
[ko̞ʁ̞əg̊ˈt͡suˀɐ̯]	[g̊ʰɔ̞ʁ̞eg̊ˈt͡sʊɐ̯]	[g̊ʰɔ̞ʁəg̊ˈt͡suɐ̯]	[g̊ʰɔ̞ʁ̞əg̊ˈd͡suɐ̯]	[g̊ʰɔ̞ʀeg̊ˈd͡suɐ̯]
[ˈn̺ɔ:sg̊]	[ˈnɔ̞:s̺g̊]	[ˈnɔ̞sg̊]	[ˈnɔ̞:sg̊]	[ˈnɔ̞ˀsg̊]
[päˈpiˀɐ̯]	[pɐˈb̥ʰiɐ̯]	[b̥ʰɐˈb̥ʰiɐ̯]	[b̥ʰäˈb̥ʰiɐ̯]	[päˈpiɐ̯]
[ˈʁ̞ˠi:͵tɔmˀ]	[ˈʔi͵d̥ʌ̞m]	[ˈʁiˀ͵d̥ʌ̞m]	[ˈʁ̞i͵d̥əm]	[ˈʁ̞iˀ͵d̥ʌ̞m]
[ˈfʁ̞eg̊]	[ˈfʔɛg̊]	[ˈfʁæg̊]	[ˈfʁ̞ɛg̊]	[ˈfʀeg̊]
[ˈʁ̞iˀs]	[ˈʔis̺]	[ˈʁ̞is]	[ˈʁ̞is]	[ˈʁiˀs]
[ˈb̥eɐ̯ˀ]	[ˈbʲeɐ̯]	[ˈb̥ɛɐ̯]	[ˈbɛɐ̯]	[ˈb̥eɐ̯]
[ˈg̊ʰi ɐ̯g̊ə]	[ˈg̊ʰiɐ̯g̊ə]	[ˈg̊ʰiɐ̯g̊ə]	[ˈg̊ʰiɐ̯g̊ə]	[ˈg̊ʰiɐ̯g̊ə]
[ˈmo̞ɐ̯ˀ]	[ˈmoˀ]	[ˈmo̞ɐ̯]	[ˈmo̞ɐ̯]	[ˈmo̞ɐ̯]
[ˈb̥ʁ̞esə]	[ˈb̥ʰʁ̞ɛsə]	[ˈb̥ʰʁ̞ɛsə]	[ˈb̥ʰʁ̞asə]	[ˈpʁ̞esə]
[ˈlyŋb̥y]	[ˈlyŋb̥y]	[ˈlyŋb̥y]	[ˈlyŋb̥y]	[ˈlyŋb̥y]
[säu̯nə]	[s̺äu̯n]	[säu̯nə]	[säu̯nə]	[s̺äu̯nə]
[ˈʁ̞y:ɘ]	[ˈʔyˑɘ]	[ˈʁ̞y:ɘ]	[ˈʁ̞y:ɘ]	[ˈʁue]
[ɕog̊oˈlɛ:ð̞ˠ̩ ə]	[ʃog̊oˈla:ð̞ˠ̩ ə]	[ɕog̊əˈlɛˑð̞ˠ̩ ə]	[ɕog̊oˈla̞:ð̞ˠ̩ ə]	[ço̞g̊oˈlɛð̞ˠ̩ ə]

[ɻʊˈt͡si:nə]	[ɻʊˈɖ͡si:nə]	[ɻuˈt͡siːnə]	[ɻʊˈɖ͡si:nə]	[ʁuˈti:nə]
[ˈb̥ä:sg̊]	[ˈbä:sg̊]	[ˈb̥äːsg̊]	[ˈb̥ä:sg̊]	[ˈbä:sg̊]
[ˈt͡soj]	[ˈɖ͡sɔ̟j]	[ˈt͡sʌ̟j]	[ˈɖ͡sʌ̟j]	[ˈt͡sʌ̟j]
[ˈçœɻ]	[ˈɛɔ̟ɻ]	[ˈçɔ̟ɻ]	[ˈɛɔ̟ɻ]	[ˈɛɔ̟ɻ]
[ʊmˈt͡soʲəli]	[əmˈɖ͡sɔ̟ləlʲi]	[ˈømˌt͡sɔ̟ləli]	[ɵmˈɖ͡sɔ̟ləli]	[ɛmˈt͡sɔ̟leli]
[ˈmu:liˌvis]	[ˈmuʔliˈviʂ]	[ˈmuliˈvis]	[ˈmu:liˈvis]	[ˈmuʔliˈvis]
[ˈg̊ɛɐ̯nə]	[ˈg̊eɐ̯nə]	[ˈg̊ɛɐ̯nə]	[ˈgɛɐ̯nə]	[ˈg̊ɛɐ̯nə]
[ˈmo:lə]	[ˈmoˑlə]	[ˈmoˑle]	[ˈmo:lə]	[ˈmɔ̟:lə]
[äg̊ʰub̥ʰuŋˈt͡suɐ̯ˀ]	[ɐkʊpʊŋˈɖ͡suɐ̯]	[äkupuŋˈt͡suɐ̯]	[ɐg̊ʰub̥ʰuŋˈɖ͡suɐ̯]	[äg̊ʰuˈb̥ʰuŋɖ͡suɐ̯]
[ˈvägt]	[ˈvägt]	[ˈväkt]	[ˈvägd̥]	[ˈvägɖ͡s]
[ˈkvo:tą]	[ˈkvoːɖą]	[ˈkvɔˑɖą]	[ˈg̊ʰvɔ̟:ɖ͡są̟]	[ˈg̊ʰvo:ɖ͡sə]
[ˈhäu̯nə]	[ˈhäu̯nə]	[ˈhäu̯nə]	[ˈhäu̯nə]	[ˈhäu̯nə]
[ˈhœ̟:nə]	[ˈhœ̟:nə]	[ˈhø:nə]	[ˈhœ̟nə]	[ˈhœ̟ˑnə]
[ˈniu̯]	[ˈkniu̯]	[ˈg̊ʰniu̯]	[ˈg̊ʰniu̯]	[ˈg̊ʰniu̯]
[ˈg̊ʰɔ̟ː]	[ˈg̊ʰɔ̟:]	[ˈg̊ʰɔ̟ː]	[ˈg̊ʰɔ̟:]	[ˈg̊ʰɔ̟:]
[ˈu:ə]	[ˈu:ə]	[ˈu:ə]	[ˈu:ə]	[ˈu:ə]
[koˈɻub̥t]	[g̊ʰoˈɻub̥d̥]	[g̊ʰoˈɻub̥d̥]	[g̊ʰɔ̟ˈɻub̥t]	[g̊ʰoˈʁɔub̥t]
[ˈb̥ɻɐu̯]	[ˈb̥ɻɛu̯]	[ˈb̥ɻɐu̯]	[ˈb̥ɻɐu̯]	[ˈb̥ɻɐu̯]
[ˈt͡sœg̊ʰle:ðə]	[ˈɖ͡sœ̟g̊ʰˌle:ð̞ɐ̯ə]	[ˈt͡sœg̊ʰle:ð̞ɐ̯ə]	[ɖ͡sœ̟ˈg̊ʰle:ð̞ɐ̯ə]	[ˌɖ͡sœ̟ˈg̊ʰleð̞ɐ̯ə]
[ˈmʊ:nə]	[ˈmunə]	[ˈmu:nə]	[ˈmunə]	[ˈmɔ̟nə]
[t͡siu̯lit]	[ˈɖ͡siðˌɪt]	[ˈt͡siðˌlit͡s]	[ˈɖ͡siðˌliˌd̥]	[ˈɖ͡siðˌliˌɖ͡s]
[fyɛoloˈg̊iˀ]	[fysioloˈki]	[fysioloˈg̊iˀ]	[fyɛo̞lo̞ˈg̊iˀ]	[fysio̞lo̞ˈg̊iˀ]
[ˈveg̊]	[ˈvʲeke]	[ˈvekə]	[ˈvɛkə]	[ˈveg̊ə]
[foˈsg̊e:li]	[foˈʂg̊ʰelʲi]	[fɔˈskeli]	[fʌ̟ˈsg̊ɛli]	[fəˈsg̊eli]
[ˈt͡sɻygə]	[ˈt͡sɻykə]	[ˈt͡sɻygə]	[ˈɖ͡sɻygə]	[ˈɖ͡sʁygə]
[b̥eˈɻeð̞ˌˌsg̊ɛb̥]	[ˈbiɣəˌʂg̊ɛp]	[ˈb̥aɻəˌsg̊ɛb̥]	[ˌb̥ɻɛð̞ˌˈsg̊ɛb̥]	[b̥əˈɻẹð̞ˌˌsg̊ɛb̥]
[b̥ʰeɖaˈg̊oɻˀ]	[peɖɐˈg̊ʰoɻ]	[b̥ʰ ɪɖɐˈg̊ǫuˀ]	[b̥ʰeɖɐˈg̊ǫɻ]	[peɖäˈg̊ǫɻˀ]
[nɛɐ̯ˈvɜsitəð̞ˌ]	[nəvøʂiˈɖ͡sit]	[nɛɐ̯vøˈsitəɖ]	failed	[neˌvɜsiˈti]
[ˈle:sə]	[ˈle:sə]	[ˈme:sə]	[ˈle:sə]	[ˈle:ʂə]
[ˈfyˀsisg̊]	[fyˈsisg̊]	[fyˈsisg̊]	[fyˈsiˀsg̊]	[ˈfyˀsisg̊]
[ʊŋˈɖo̞mɐli]	[ˈuŋɖɔməli]	[ˈuŋˌɖɔməli]	[ʊŋˈdomeli]	[ʊŋˈɖʌməli]
[ˈg̊ʰøsə]	[ˈg̊ʰyˑsə]	[ˈg̊ʰøˑsə]	[ˈg̊ʰysə]	[ˈkyʂə]
[ˈg̊ʰø:b̥ə]	[ˈkø:bə]	[ˈg̊ʰøˑb̥ə]	[ˈg̊ʰyb̥ə]	[ˈkyb̥ə]
[ˈɖɻeŋ]	[ˈɖʔeŋ]	[ˈɖɻaŋ]	[ˈɖɻɛŋ]	[ˈɖʁaŋ]
[nøð̞ˌˈvendi]	[nøð̞ˌˈvʲenɖi]	[nøð̞ˌˈvenɖi]	[nøð̞ˌˈvenɖi]	[nøð̞ˌˈvenɖi]
[b̥ʰeɖaˈg̊oʔisk]	[peɖɐˈ g̊og̊iʂg̊]	[b̥ʰeɖɐˈg̊og̊isg̊]	[b̥ʰeɖaˈg̊ǫuisg̊]	[pɪɖɐˈg̊oʔgisg̊]
[ˈsmœˀ]	[ˈʂmɶ]	[ˈsmɶˀ]	[ˈsmɶɐ̯]	[ˈsmɶɐ̯]
[ˈlu̯g̊ə]	[ˈlukɛ]	[ˈlug̊ə]	[ˈɬug̊ə]	[ˈɬug̊ə]
[ˈɖɻɔmeɖɐ̯]	[ˈɖʔɔməɖä]	[ˈɖʁɔmədɐ]	[ˈɖɻoməɖa]	[ˈɖʁɔməɖäˀ]
[ˈb̥ɔwmestʌ̟]	[ˈb̥ɔwˌmistə]	[ˈb̥ɔwˌmesɖʌ̟]	[ˌb̥ɔwˈmisɖʌ̟]	[ˈb̥o̞ɐ̯ˈmesɖʌ̟]

[ˈneɐ̯meɐ̯]	[ˈnʲeɐ̯mʌ̟ʌ̟]	[ˈneɐ̯miə]	[ˈnɛɐ̯mʌ̟]	[ˈneməʁ̝ə]
[ˈsd̥ɔːmə]	[ˈsd̥ɔːmə]	[ˈsd̥ɔ̝ːmə]	[ˈsd̥ɔ̝ːmə]	[ˈsd̥ɔ̝ːmə]
[ˈɔ̝ːnə]	[ˈɔ̝nʌ̟]	[ˈɔ̝nʌ̟]	[ˈɔ̝nʌ̟]	[ˈʌ̟nə]

R 9	R 10	R 12	R 13
[b̥ʰa̝nə]	[b̥ʰa̝ːnə]	[b̥ʰa̝ːnə]	[pa̝nə]
[ˈd̥ynə]	[ˈd̪yːnə]	[ˈd̪yːnə]	[ˈd̪ynə]
[ˈg̊ʰɛɐ̯łiˌhe̝ð̠ˠ̝]	[ˈg̊ʰɛɐ̯liˌhe̝ð̠ˠ̝]	[ˈg̊ʰɛɐ̯liˌhe̝ð̠ˠ̝]	[ˈg̊ʰɛɐ̯liˌhɪð̠ˠ̝]
[ˌud̥͡sg̊ɐkˈnemeli]	[ˈud̥͡säg̊ˌneməli]	[ʊd̥͡sɐg̊ˈnɛməli]	[ʊd̥͡sɐg̊ˈnɛmɛli]
[ˈb̥ɛð̠ˠ̝ əˌveəlsə]	[ˈb̥ɛːð̠ˠ̝ əˌvɛɐ̯lsə]	[ˌb̥ɛːð̠ˠ̝ əˈvɛɐ̯lsə]	[ˌb̥ɛð̠ˠ̝ əˈveɐ̯lsə]
[ˈmäŋlə]	[ˈmäŋlə]	[ˈmäŋlə]	[ˈmäŋlə]
[ˈfaʁ̝ə]	[ˈfäːä]	[ˈfäːä]	[ˈfäːä]
[ˈønsg̊əp]	[ˈo̝ˀnˌsg̊ɛb̥]	[ˈo̝nˌs̪g̊ɛˀb̥]	[ˈo̝nˌsg̊ɛb̥]
[ˈs̪ofɐ]	[ˈso̝ːfɐ]	[ˈs̪oːfa̝]	[ˈsofɐ]
[ˈʁ̝äə]	[ˈʁ̝äːä]	[ˈʁ̝äːʁ̝ə]	[ˈʁ̝äʁ̝ə]
[b̥ɪˈsd̥emə]	[b̥e̝ˈsd̥emə]	[bəˈs̪d̥emə]	[bəˈsd̥emə]
[ˈhʌ̟b̥e]	[ˈhʌ̟b̥ə]	[ˈhob̥ə]	[ˈhɔb̥ə]
[d̪um]	[d̥um]	[d̪um]	[d̪um]
[s̪g̊äːb̥]	[sg̊äːb̥]	[s̪g̊äb̥]	[sg̊äːb̥]
[ˈg̊ʰɛɐ̯s̪d̥əʁ̝ə]	[ˈg̊ʰɛɐ̯ʌ̟sd̥əˌʁ̝əʌ̟]	[ˌg̊ʰeʁ̝əsd̥əˈʁ̝e̝ʁ̝ə]	[ˈkʲeʁ̝əsd̥əʁ̝ə]
[s̪d̥ɔ̝m]	[sd̥ɔ̝m]	[s̪d̥ɔm]	[sd̥ɔm]
[ˈɛɐ̯ˌg̊ʰenə]	[ˈɛɐ̯ˌg̊ʰenə]	[əˈg̊ʰenə]	[eɐ̯ˈg̊ʰenə]
[ˈs̪yd̥n]	[ˈs̪ʲyd̥n]	[ˈs̪yd̥n]	[ˈs̪ʲyd̥n]
[ˈs̪ʁ̝ið̠ˠ̝ ə]	[ˈsd̥ʁ̝iːð̠ˠ̝ ə]	[ˈs̪d̥ʁ̝iːð̠ˠ̝ ə]	[ˈsd̥ʁ̝ið̠ˠ̝ ə]
[ˈgäfəl]	[ˈg̊äfəl]	[ˈg̊afəl]	[ˈg̊afəl]
[ˈkinɐ]	[ˈg̊ʰiːnɐ]	[ˈkiːna̝]	[ˈkinɐ]
[ˈxið̠ˠ̝əð̠ˠ̝]	[ˈhe̝ð̠ˠ̝əd̥]	[ˈheð̠ˠ̝əd̥]	[ˈheð̠ˠ̝əd̥]
[ˈva̝s̪g̊əð̠ˠ̝]	[ˈva̝sg̊əð̠ˠ̝]	[ˈva̝sg̊əð̠ˠ̝]	[ˈva̝sg̊əð̠ˠ̝]
[ˈb̥inə]	[ˈb̥e̝nə]	[ˈbinə]	[ˈbinə]
[ɐb̥äˈʁ̝äˀt]	[äb̥äˈʁ̝äˀd̥]	[ɐb̥ɐˈʁ̝äˀd̥]	[ɐb̥ɐˈʁ̝äd̥]
[bɐˈgʲeːɕə]	[b̥ɐˈg̊ɛːʃə]	[bɐˈg̊ɛːɕə]	[bɐˈgas̪ə]
[ˈb̥ʰa̝nəʌ̟]	[b̥ʰ a̝ˈniə]	[paˈniʁ̝ə]	[ˈpa̝nəʁ̝ə]
[bɪˈs̪leg̊d̥͡sɪð̠ˠ̝]	[b̥e̝ˈslʲeg̊d̥əð̠ˠ̝]	[bɪˈs̪lʲeg̊d̥əð̠ˠ̝]	[bɪˈsleg̊d̥əð̠ˠ̝]
[ˈfɔ̝ːˌb̥ɪləð̠ˠ̝ə]	[fəˈb̥e̝ləð̠ˠ̝ ə]	[ˌfəˈbiləð̠ˠ̝ ə]	[ˌfoˈbiləð̠ˠ̝ ə]
[əˈle̝ːnə]	[a̝ˈle̝ːnə]	[əˈlʲiːnə]	[əˈlʲiːnə]
[ˈma̝ð̠ˠ̝]	[ˈma̝ð̠ˠ̝]	[ˈma̝ð̠ˠ̝]	[ˈma̝ð̠ˠ̝]
[ˈs̪inə]	[ˈse̝ːnə]	[ˈs̪iːnə]	[ˈsinə]
[ˈfa̝lsg̊]	[ˈfa̝lsg̊]	[ˈfa̝lsg̊]	[ˈfa̝lsg̊]
[ˈbuːə]	[ˈb̥uːə]	[ˈb̥uːə]	[ˈbuə]
[ˈdoən]	[ˈd̥ɔ̝u̯ən]	[ˈd̪ɔ̝u̯ən]	[ˈd̪ɔ̝u̯ən]

[ˈgemə]	[ˈg̊emə]	[ˈg̊emə]	[ˈgʲemə]
[ˈgans̠g̊ə]	[ˈg̊a̞nsg̊ə]	[ˈg̊ans̠g̊ə]	[ˈgansg̊ə]
[ˈfla̞mə]	[ˈflämə]	[ˈfla̞mə]	[ˈflamə]
[ˈg̊ulˠ]	[ˈg̊ɔ̞l]	[ˈgul]	[ˈgulˠ]
[bɪˈgɛi̯sd̥ʁ̞əð̠ˠ̞]	[b̥e̞ˈgäi̯sd̥ʁ̞ʌ̞ð̠ˠ̞]	[bɪˈg̊äi̯sd̥ʁ̞ʌ̞ð̠ˠ̞]	[bɪˈg̊äi̯sd̥ʁ̞ʌ̞ð̠ˠ̞]
[ˈs̠kinə]	[ˈsg̊e̞nə]	[ˈs̠kinə]	[ˈske̞nə]
[ˈhʲeməli]	[ˈxʲeməlid̥]	[ˈheməlid̥]	[ˈheməlid̥]
[ˈfilʲm]	[ˈfilm]	[ˈfilʲm]	[ˈfiɫm]
[ˈvilə]	[ˈve̞lə]	[ˈve̞lə]	[ˈve̞lə]
[ˈg̊ʰai̯ˀ]	[ˈg̊ʰäi̯]	[ˈkai̯]	[ˈg̊ʰ äi̯]
[ˈhumus̠]	[ˈhumus]	[ˈhumus]	[ˈhumus]
[ˈviˌg̊ʰäː]	[ˈvig̊ʰäː]	[vɪˈka]	[ˈvikɑ]
[ˈlʲiu̯lʲi]	[ˈlʲiu̯lʲi]	[ˈlʲiu̯lʲi]	[ˈlʲiu̯lʲi]
[ˈs̠g̊ʁ̞iːvə]	[ˈsg̊ʁ̞iːvə]	[ˈs̠g̊ʁ̞iːvə]	[ˈsg̊ʁ̞ivə]
[ˈdai̯]	[ˈd̥äi̯]	[ˈd̥äi̯]	[ˈd̥äi̯]
[ˈjoð̠ˠ̞]	[ˈjo̞ð̠ˠ̞]	[ˈjo̞ð̠ˠ̞]	[ˈjoð̠ˠ̞]
[ø̞ˈg̊ʰologi]	[ø̞g̊ʰo̞lo̞ˈg̊iˀ]	[ø̞g̊ʰəloˈg̊i]	[əg̊ʰəɫoˈgi]
[d̥ɪˈta̞ljə]	[d̥e̞ˈd̥͡sa̞ljə]	[d̥ɪˈt͡sa̞ljə]	[dɪˈd̥͡sa̞ljə]
[ˈkʲiɹs̠ˌb̥ɛɐ̯]	[ˈg̊ʰiɐ̯səˌb̥eɐ̯]	[ˈg̊ʰiɐ̯s̠əˌbɛɐ̯]	[ˈg̊ʰiɐ̯səˌbʲeɐ̯]
[ˈleŋə]	[ˈleŋə]	[ˈlʲeŋə]	[ˈlʲeŋgə]
[ˈb̥oˌb̥ʰelʲ]	[ˈb̥o̞ˌb̥ʰelʲ]	[ˈbo̞ˌb̥ʰelʲ]	[ˈbo̞ˌb̥ʰelʲ]
[mɔˈs̠ki]	[mo̞ˈsg̊e̞ˀ]	[mɔˈs̠ki]	[ˌmɔ̞ˈsg̊i]
[ˈkulʲe]	[ˈg̊ʰulə]	[ˈkulə]	[ˈkulə]
[ˈla̞məˌg̊ʰø̞ð̠ˠ̞]	[ˈläməˌg̊ʰø̞ð̠ˠ̞]	[ˈla̞məˌg̊ʰø̞ð̠ˠ̞]	[ˈɫaməˌg̊ʰø̞ð̠ˠ̞]
[ˈbäŋke]	[ˈb̥äŋg̊ə]	[ˈb̥äŋg̊ə]	[ˈbaŋkə]
[ˈs̠mað̠ˠ̞ʁ̞ə]	[ˈsmäð̠ˠ̞ʁ̞ə]	[ˈs̠mäð̠ˠ̞ʁ̞ə]	[ˈsmað̠ˠ̞ʁ̞ə]
was not read	[ˈg̊ʰunə]	[ˈkunə]	[ˈkunə]
[ˈnes̠d̥ə]	[ˈnʲesd̥ə]	[ˈnes̠d̥ə]	[ˈnesd̥ə]
[ˈgäŋə]	[ˈg̊äŋə]	[ˈg̊äŋə]	[ˈg̊äŋə]
[ˈg̊o̞ð̠ˠ̞]	[ˈg̊o̞ˀ]	[ˈg̊o̞ð̠ˠ̞]	[ˈguð̠ˠ̞]
[ˈg̊œ̞ɐ̯]	[ˈg̊œ̞ː]	[ˈg̊œ̞ːʁ̞ə]	[ˈgœ̞ː]
[ˈmʲenəs̠kʲe]	[ˈmenʲesg̊ə]	[ˈmenəs̠g̊e]	[ˈmenɛsg̊e]
[ˈb̥a̞ŋ]	[ˈb̥äŋ]	[ˈbäŋ]	[ˈbäŋ]
[iʁ̞ɔˈkʲesʌ̞]	[iʁ̞o̞ˈg̊ʰe̞sʌ̞]	[iʁ̞o̞ˈg̊ʰe̞sʌ̞]	[iʁ̞oˈg̊ʰesə]
[boˈliviənsg̊]	[b̥o̞liviˈʌnsg̊]	[ˈbolʲiviənsg̊]	[ˈbolʲiviənsg̊]
[ˈs̠kuːlə]	[ˈsg̊uːlə]	[ˈs̠g̊uːlə]	[ˈsg̊ʰulə]
[ˈkuːnə]	[ˈg̊ʰuːnə]	[ˈkuːnə]	[ˈkunə]
[ˈpis̠kəˌfɫʏð̠ˠ̞ə]	[ˈb̥ʰisg̊əˌflø̞ːð̠ˠ̞ə]	[ˌb̥ʰis̠g̊əˈflø̞ːð̠ˠ̞ə]	[ˌb̥ʰisg̊əˈflø̞ːð̠ˠ̞ə]
[ko̞ʁ̞əg̊ˈt͡suɐ̯]	[g̊ʰɔ̞ʁ̞əg̊ˈd̥͡suɐ̯]	[g̊ʰɔəg̊ˈt͡suɐ̯]	[g̊ʰɔˈʁ̞ɛg̊d̥͡sʊ]

[ˈnoːs̪g̊]	[ˈnɔ̞sg̊]	[ˈnɔ̞s̪g̊]	[ˈnɔ̞sg̊]
[b̥ʰäˈb̥ʰiɐ̯]	[b̥ʰa̞ˈb̥ʰiɐ̯]	[päˈpiɐ̯]	[päˈb̥ʰiɐ̯]
[ˈʁ̞iːˌd̪ʌ̞m]	[ˈʁ̞iˌd̥ʌ̞m]	[ˈʁ̞iːˌd̥əm]	[ˈʁ̞iˌd̥ʌ̞m]
[ˈfʁ̞ɛg̊]	[ˈfʁ̞eg̊]	[ˈfʁ̞ɛg̊]	[ˈfʁ̞ɛg̊]
[ˈʁ̞i]	[ˈʁ̞iˀs]	[ˈʁ̞is̪]	[ˈʁ̞is]
[ˈbɛɐ̯]	[ˈb̥eɐ̯]	[ˈbʲeɐ̯]	[ˈbʲeɐ̯]
[ˈg̊ʰiɐ̯g̊ʌ̞]	[ˈg̊ʰiɐ̯g̊ə]	[ˈkiɐ̯g̊ə]	[ˈg̊ʰiɐ̯g̊ə]
[ˈmo̞ɐ̯]	[ˈmo̞ɐ̯]	[ˈmo̞ɐ̯]	[ˈmo̞ɐ̯]
[ˈb̥ʰʁ̞ɛə]	[ˈb̥ʰʁ̞ɛsə]	[ˈpʁ̞as̪ə]	[ˈb̥ʰʁ̞asə]
[ˈlyŋb̥y]	[ˈlyŋb̥y]	[ˈlyŋb̥y]	[ˈlyŋby]
[säu̯nə]	[säu̯nə]	[s̪äu̯nə]	[s̪äu̯n]
[ˈʁ̞uːə]	[ˈʁ̞yːə]	[ˈʁ̞yːə]	[ˈʁ̞ʏɐ̯]
[ʃog̊oˈla̞ːð̠ə]	[ʃog̊oˈla̞ːð̠ˠ̞ ə]	[ʂog̊oˈla̞ːð̠ˠ̞ ə]	[ʂog̊oˈlaːð̠ˠ̞ ə]
[ʁ̞uˈtiːnə]	[ʁ̞ʊˈd̥͡siːnə]	[ʁ̞uˈd̥͡siːnə]	[ʁ̞uˈt̪iˑnə]
[ˈb̥äːs̪g̊]	[ˈb̥äːsg̊]	[ˈb̥as̪k]	[ˈbäːsg̊]
[ˈt͡sɔj]	[ˈd̥͡sʌ̞j]	[ˈt͡səj]	[ˈt͡sʌ̞j]
[ˈʂ̪jɔu̯]	[ˈɕʲɔ̞u̯]	[ˈɕœu̯]	[ˈçøu̯]
[ɘmˈt͡sɔjlelʲi]	[ˈømˌd̥͡sɔ̞ləli]	[əmˈt͡sɔ̞ləlʲi]	[əmˈd̥͡sɔ̞ləlʲi]
[ˈmuːljivis̪]	[ˈmuˀliˈvis]	[ˈmulʲɪvɪs̪]	[ˈmuɫɪvɪs]
[ˈgeɐ̯nə]	[ˈg̊ɛɐ̯nə]	[ˈg̊ɛɐ̯nə]	[ˈg̊eɐ̯nə]
[ˈmɔ̞ːlə]	[ˈmɔ̞ːlə]	[ˈmɔ̞ːlə]	[ˈmɔ̞ˑlə]
[äg̊ʰub̥ʰuŋˈd̥͡suɐ̯]	[äg̊ʰub̥ʰuŋˈd̥͡suɐ̯]	[ɐkʊpʊŋˈt͡suɐ̯]	[ɐkʊpʊŋˈd̥͡suɐ̯]
[ˈväg̊d̥]	[ˈväg̊d̥]	[ˈväg̊d̥]	[ˈväg̊d̥]
[ˈg̊ʰvotɐ]	[ˈg̊ʰvoːtə]	[ˈkvoːd̥a̞]	[ˈkvoːt͡sɐ]
[ˈhäu̯nə]	[ˈhäu̯nə]	[ˈxäu̯nə]	[ˈhäu̯nə]
[ˈxʲʉːnə]	[ˈhøːnə]	[ˈhʏːnə]	[ˈhœ̞ˑnə]
[ˈg̊ʰniu̯ˀ]	[ˈg̊ʰniu̯]	[ˈkniu̯]	[ˈg̊niu̯]
[ˈkowə]	[ˈg̊ʰɔ̞ːwə]	[ˈkɔ̞ːwə]	[ˈkɔ̞ˑwə]
[ˈuːə]	[ˈuːə]	[ˈuːə]	[ˈuˑə]
[g̊ʰoˈʁ̞ub̥d̥]	[g̊ʰɐˈʁ̞ub̥t]	[koˈʁ̞ub̥d̥]	[koˈʁ̞ub̥d̥]
[ˈb̥ʁ̞eu̯]	[ˈb̥ʁ̞eu̯]	[ˈb̥ʁ̞eu̯]	[ˈb̥ʁ̞ɛu̯]
[ˈt͡sœ̞g̊ʰlɛːð̠ˠ̞ə]	[ˈd̥͡sœ̞ɐ̯g̊ʰleːð̠ˠ̞ə]	[ˈt͡sœ̞g̊ʰˌleð̠ˠ̞ə]	[ˈd̥͡sœ̞g̊ʰˌleð̠ˠ̞ə]
[ˈmunə]	[ˈmunə]	[ˈmunə]	[ˈmunɛ]
[ˈt͡sið̠lit]	[ˈd̥͡sið̠ˠ̞lit]	[ˈt͡sið̠ˠ̞lʲɪd̥]	[ˈd̥͡sið̠ˠ̞lʲɪd̥]
[fyzioˈlogi]	[fysioloˈg̊iˀ]	[fysio̞lo̞ˈg̊iˀ]	[fysioloˈgiˀ]
[ˈveg̊ə]	[ˈvʲeg̊ə]	[ˈveg̊ə]	[ˈvʲeke]
[foˈʂg̊eli]	[foˈsg̊eli]	[fəˈs̪g̊elʲi]	[foˈsg̊ʰelʲi]
[ˈd̥͡sʁ̞ykʲe]	[ˈd̥͡sʁ̞yg̊ə]	[ˈd̥͡sʁ̞yg̊ə]	[ˈt̪ʁ̞ykə]
[bəˈʁ̞id̥ˌs̪g̊ɛb̥]	[b̥eˈʁ̞ɨð̠ˠ̞ˌsg̊ɛp]	[bɛˈʁ̞ɛð̠ˠ̞ˌs̪g̊ɛb̥]	[bəˈʁ̞ɛð̠ˠ̞ˌsg̊əp]
[pedɐˈgou̯]	[ˈb̥ʰed̥ɐˌg̊ou̯ˀ]	[ped̥ɐˈg̊oˀu̯]	[ped̥ɐˈg̊ou̯ˀ]

[neʁˌvøʂiˈd̥eˌd̥]	[nɪˀvøsiˈd̥seˀd̥]	[nəvøʂiˈd̥seˀd̥]	[nəvøsiˈd̥seˌd̥]
[ˈleːʂə]	[ˈleːsə]	[ˈlʲeːʂə]	[ˈlʲeːsə]
[ˈfysisɡ̊]	[fyˈsisɡ̊]	[ˈfysisɡ̊]	[fyˈsisɡ̊]
[ʊŋɡ̊ˈd̥ʌməli]	[ˈo̥ŋd̥ɔməli]	[ʊŋˈd̥ɔməli]	[ʊŋˈd̥ɔməli]
[ˈkyʂə]	[ˈɡ̊ʰøsə]	[ˈkyʂə]	[ˈkysə]
[ˈkøbə]	[ˈɡ̊ʰøːb̥ə]	[ˈkyːb̥ə]	[ˈkøbə]
[ˈd̥ɤaŋ]	[ˈd̥ɤaŋ]	[ˈd̥ɤaŋˀ]	[ˈd̥ɤeŋ]
[nød̥ˈvend̥ʲi]	[nøðˌˈveˀnd̥i]	[nøˈvendid̥]	[nøðˌˈvʲend̥i]
[b̥ʰed̥ɐˈgogisɡ̊]	[b̥ʰed̥ɐˈɡ̊oˀɥisɡ̊]	[ped̥ɐˈɡ̊o̥ˀisʂɡ̊]	[ped̥ɐˈgogisɡ̊]
[ˈʂmʲəɐ̯]	[ˈsmɐ̯]	[ˈʂmɐ̯]	[ˈsmɐ̯ɐ̯]
[ˈɬukə]	[ˈɬuɡ̊ə]	[ˈɬuɡ̊ə]	[ˈlʏɡ̊ɛ]
[ˌd̥ɤɔmeˈd̥ɛɐ̯]	[ˈd̥ɤɔməd̥ɐ]	[ˈd̥ɤɔmed̥ɐ]	[ˈtɤɔmedɐ]
[ˈbɔwˌmeʂd̥ʌ]	[ˈb̥ɔwˌmesd̥ʌ]	[b̥o̥wˈmiʂd̥ʌ]	[ˈb̥ɔwmestə]
[ˈnɛɐ̯mʌʌ]	[ˈnɛɐ̯mʌʌ]	[ˈnɛɐ̯mʌɤə]	[ˈneɐ̯meɤʌ]
[ˈsd̥ɔɐ̯mə]	[ˈsd̥ɔːmə]	[ˈʂd̥ɔːmə]	[ˈsd̥ɔˑmə]
[ˈo̥nʌ]	[ˈʌnʌ]	[ˈonʌ]	[ˈonə]

Appendix 20. Transcriptions of the vowel and consonant targets in the D-group

D 1	D 2	D 3	D 4	D 5
[pʌnə]	[pʌnə]	[pʌnə]	[pʌnə]	[pʌnə]
[ˈd̥yːnə]	[ˈd̥ynə]	[ˈd̥ynə]	[ˈdynə]	[ˈd̥ynə]
[ˈkɛɐ̯lʲiˌhəlʲ]	[ˈɡ̊ʰɛɐ̯liˌhɛðˌˀ]	[ˈkɛɐ̯liˌhəðˌ]	[ˈkɛɐ̯liˌhɛðˌ]	[ˈɡ̊ʰɛɐ̯liˌhɪðˌ]
[utäkˈn̪emeli]	[utäɡ̊ˈnemeli]	[utäɡ̊ˈnemli]	[ud̥äɡ̊ˈneməli]	[ʊd̥sɐɡ̊ˈnɛməli]
[ˌbɛðˌəˈveɐ̯lsə]	[ˈb̥ɛːðˌəˌvɛɐ̯lsə]	[ˈbeðˌəˌvɛlʂə]	[ˈbʌðˌˌvɛlʂə]	[ˈbɛðˌəˌveɐ̯lʂə]
[ˈmɑ̃ŋlə]	[ˈmʌŋlə]	[ˈmäŋᵍlə]	[ˈmäŋglə]	[ˈmʌŋlə]
[ˈfʌə]	[ˈfäːä]	[ˈfʌə]	[ˈfäːä]	[ˈfäːä]
[ˈonʂˌkap]	[ˈo̥nsɡ̊əb̥]	[ˈo̥nˌʂɡ̊ʌp]	[ˈ ʏnˌskẹb̥]	[ˈo̥nsɡ̊əb̥]
[ˈsoːfa]	[ˈsoʊːfə]	[ˈsoˑfɐ]	[ˈsoəːfɐ]	[ˈsofɐ]
[ˈɹäːe]	[ˈɤäə]	[ˈɤäːə]	[ˈɤʌə]	[ˈɤäːə]
[bɪˈstemə]	[b̥ɪˈsd̥emə]	[b̥ɛˈd̥ɛmɛ]	[bəˈstemə]	[bɪˈsd̥emə]
[ˈhopə]	[ˈhʌb̥ə]	[ˈhopɛ]	[ˈhʌb̥ə]	[ˈhʌb̥ə]
[d̪um]	[d̪um]	[d̥um]	[d̪um]	[dum]
[skäp]	[sɡ̊äːb̥]	[sɡ̊äːp]	[sɡ̊äːb̥]	[sɡ̊äb̥]
[ˈkɛɐ̯sʈee]	[ˈkɛɐ̯sd̥əʌ]	[kɛɐ̯sd̥əə]	[ˈɡ̊ʰɛɐ̯sd̥əɤʌ]	[ˈkʲeɐ̯sd̥əɐ̯ʌ]
[stom]	[sd̥o̥m]	[ʂd̥om]	[stɔm]	[sd̥ɔm]
[ˈɛɐ̯kɛnə]	[ˈɛɐ̯ɡ̊ʰənə]	[ˈɛɐ̯keɳə]	[ɛɐ̯ˈɡ̊ʰenə]	[əˈkʲenə]

[ˈsø̞ten]	[ˈsø̞d̥n]	[ˈs̪ʲyd̥n]	[ˈs̪ʏtən]	[ˈsyd̥n]
[ˈstr̝iːr̝ə]	[ˈsʈʁ̝ijə]	[ˈs̪d̥ʁ̝iðˠ̠̝ ə]	[ˈstɹɨðˠ̠̝ ə]	[ˈsd̥ʁ̝iðˠ̠̝ ə]
[ˈgɑ̈fəl]	[ˈgɑ̈fl]	[ˈg̊ɑ̈fəl]	[ˈg̊ɑ̈fəl]	[ˈg̊afəl]
[ˈkiːna]	[ˈg̊ʰiˑnə]	[ˈkin̪ɐ]	[ˈg̊ʰiːn̪ɐ]	[ˈg̊ʰinə]
[ˈheð̠ət]	[ˈhe̝ðˠ̠̝]	[ˈheðˠ̠̝əd̥]	[ˈhe̝ðˠ̠̝ət]	[ˈhe̝ðˠ̠̝əd̥]
[ˈvaskət]	[ˈva̝sg̊əðˠ̠]	[ˈva̝s̪g̊əd̥] dialect	[ˈvas̪kət]	[ˈva̝s̪g̊əðˠ̠]
[ˈbinə]	[ˈb̥inə]	[ˈb̥in̪ə]	[ˈb̥e̝nə]	[ˈb̥inə]
[ɐb̥ɑ̈ˈʁ̝ɑ̈d̥]	[ɐb̥əˈʁ̝a̝d̥]	[ab̥aˈʁ̝ad̥]	[ɑ̈b̥ɑ̈ˈʁ̝ɑ̈t]	[ɐb̥ɐˈʁ̝ɑ̈d̥]
[baˈgaːɕə]	[b̥ɐˈgaz̥ː]	[b̥ɐˈgɛːzə]	[b̥ɐˈg̊ɛˑz]	[bɐˈg̊ɛɕə]
[ˈb̥ʰɛnɛɛ]	[pa̝ˈne̝ʌ̝]	[paˈn̪eɐ]	[b̥ʰ aˈneʌ̝]	[ˈpɐniˀʌ̝]
[b̥ɛˈs̪ɬɛgʈɛʈ]	[b̥ɪˈslejd̥əd̥]	[b̥ɛˈs̪leg̊d̥əd̥]	[bɪˈslag̊tət]	[bɪˈs̪lɛg̊d̥əðˠ̠]
[ˌfɔˈbilədə]	[fəˈb̥e̝ləðˠ̠̝ ə]	[fɔ̝ˈbiləðˠ̝ə]	[ˈfɔ̝ːˌb̥e̝ləðˠ̠̝ ə]	[ˈfob̥ɪləðˠ̠̝ ə]
[əˈlinə]	[əˈle̝ːnə]	[əˈlʲin̪ːə]	[a̝ˈle̝ːnə]	[əˈliːnə]
[ˈma̝lʲ]	[ˈməðˠ̠̝]	[ˈmɛðˠ̠̝]	[ˈma̝ ðˠ̠̝]	[ˈma̝ðˠ̠̝]
[ˈsiˑnə]	[ˈse̝nə]	[ˈs̪iːn̪ə]	[ˈse̝ːnə]	[ˈs̪e̝ːnə]
[ˈfalsk]	[ˈfa̝lsg̊]	[ˈfa̝lsg̊]	[ˈfa̝lsg̊]	[ˈfa̝lsg̊]
[ˈbui]	[ˈbuə]	[ˈbuːɛ]	[ˈb̥uə]	[ˈbuᵊ]
[ˈ d̪ou̯n]	[ˈd̪oən]	[ˈd̥ɔ̝ən]	[ˈd̪ɔ̝u̯ən]	[ˈd̪ou̯n]
[ˈgeˑmə]	[ˈg̊ɛmə]	[ˈg̊emə]	[ˈg̊emə]	[ˈgʲemə]
[ˈgɑ̈ˑnskə]	[ˈga̝nskə]	[ˈg̊an̪s̪g̊ə]	[ˈg̊ansg̊ə]	[ˈga̝nsg̊ə]
[ˈflɛˑmʲə]	[ˈflɑ̈mə]	[ˈflɑ̈mə]	[ˈfləmə]	[ˈflɑ̈mə]
[ˈgulʏ̯]	[ˈgɔ̝l]	[ˈg̊ʉlʲ]	[ˈg̊ulᶠ]	[ˈgul]
[bɪˈgɑ̈i̯stʁ̝əʈ]	[ˈb̥ɑ̈i̯əsʈʁ̝ət]	[beˈgɑ̈i̯strəʈ]	[bɪˈgɑ̈i̯sd̥ʁ̝əðˠ̠]	[bɪˈgɑ̈i̯sd̥ʁ̝ʌ̝ðˠ̠]
[ˈsg̊inə]	[ˈsg̊enə]	[ˈs̪kin̪ə]	[ˈskenə]	[ˈs̪kinə]
[ˈhimʲeli]	[ˈhɛməlid̥]	[ˈhemlit]	[ˈhɛmɛlit]	[ˈheməlid̥]
[ˈfi͡lm]	[ˈfilm]	[ˈfilm]	[ˈfilm]	[ˈfilm]
[ˈvilˑe]	[ˈve̝lə]	[ˈve̝lə]	[ˈve̝lə]	[ˈvilə]
[ˈg̊ʰɛi̯]	[ˈkɑ̈i̯]	[ˈkɑ̈i̯ˀ]	[ˈg̊ʰ ɑ̈i̯]	[ˈkɑ̈i̯]
[ˈhumus]	[ˈhumus]	[ˈhumus]	[ˈhumus]	[ˈxumus]
[viˈg̊ʰɑ̈ˑ]	[viˈkɑ̈]	[viˈka]	[viˈka]	[viˈkɑ̈ˀ]
[ˈlivli]	[ˈliu̯li]	[ˈlʲiu̯lʲi]	[ˈliu̯li]	[ˈlʲiu̯lʲi]
[ˈskɹiwə]	[ˈsg̊ʁ̝ivə]	[ˈs̪kˠɨːvə]	[ˈskʁ̝ɨvə]	[ˈs̪g̊ʁ̝iːu̯]
[ˈ d̪ei̯]	[ˈd̪ɑ̈i̯]	[ˈdai̯]	[ˈd̥ɛi̯]	[ˈdɑ̈i̯]
[ˈjoð̠ˠ]	[ˈjoð̠ˠ]	[ˈjoðˠ̠̝]	[ˈjɵðˠ̠̝]	[ˈjo̝ðˠ̠̝]
[əkoloˈgi]	[ø̝g̊ʰo̝lo̝ˈg̊i]	[əg̊ʰo̝loˈg̊i]	[ˌø̝g̊ʰo̝lo̝ˈgi]	[ø̝g̊ʰo̝lo̝ˈgiˀ]
[d̪ɪˈʈalјə]	[d̥ɪˈʈa̝ljə]	[d̪ɪˈʈɛljə]	[d̥ɪˈd̥͡sa̝ljə]	[dɪˈd̥͡sa̝lʲjə]
[ˈkisəˌbɛʲa]	[ˈg̊ʰiɐ̯səˌb̥ɛɐ̯]	[ˈg̊ʰis̪əˌb̥ɛɐ̯]	[ˈg̊ʰisəˌb̥ɛɐ̯]	[ˈg̊ʰiɐ̯səˌbʲeɐ̯]
[ˈɬɛŋə]	[ˈleŋə]	[ˈlɛŋgə]	[ˈleŋgɛ]	[ˈɬeŋə]
[ˈbopel]	[ˌb̥o̝ˈpel]	[poˈpel]	[ˈb̥oˈpel]	[ˈbob̥ʰelʲ]
[mɔ̝ˈski]	[mɔ̝ˈsg̊əˀ]	[moˈs̪ke]	[mɔ̝ˈsg̊əˀ]	[mɔ̝ˈsg̊e̝ˀ]

[ˈg̊ʰulə]	[ˈkulə]	[ˈkulʲe]	[ˈg̊ʰulə]	[ˈg̊ʰulə]
[ˈɬamʲeˌkøl]	[ˈlämə ˌg̊ʰø̞ð̠ˠ˕]	[ˈlämə ˌg̊ʰø̞ð̠ˠ˕]	[ˈlämə ˌg̊ʰø̞ð̠ˠ˕]	[ˈɬamə ˌg̊ʰø̞ð̠ˠ˕]
[ˈbaŋkʲe]	[ˈḅäŋkə]	[ˈḅäŋkə]	[ˈḅa̟ŋg̊ə]	[ˈbaŋkə]
[ˈsma̟ð̠ˠ˕ʁ̞ə]	[ˈsma̟ð̠ˠ˕ʁ̞ə]	[ˈs̪maᶞʁə]	[ˈsməð̠ˠ˕ʁ̞ə]	[ˈsma̟ð̠ˠ˕ʁ̞ə]
[ˈkunə]	[ˈkunə]	[ˈkunɛ]	[ˈkun̪ə]	[ˈkunə]
[ˈn̪ɛstə]	[ˈnesd̥ə]	[ˈn̪es̪d̥ə]	[ˈnesd̥ə]	[ˈnesd̥ə]
[ˈgängə]	[ˈg̊äŋ!]	[ˈg̊äŋgə]	[ˈg̊äŋgə]	[ˈgäŋə]
[ˈgoᵘ]	[ˈg̊oð̠ˠ˕]	[ˈkoᵘ]	[ˈg̊o]	[ˈguð̠ˠ˕]
[ˈgœ]	[ˈg̊œ̞ː]	[ˈg̊œ̞ə]	[ˈg̊œ̞]	[ˈgœ̞ː]
[ˈmenəsg̊ə]	[ˈmenəsg̊ə]	[ˈmʲen̪es̪kə]	[ˈmensg̊ə]	[ˈmenəsg̊ə]
[ˈbaŋk]	[ˈba̟ŋ]	[ˈḅäŋ]	[ˈḅa̟ŋk]	[ˈbäŋ]
[iroˈkeza]	[iʁ̞ɔˈg̊ʰesʌ̟]	[ɪʁ̞oˈkeˑsə]	[ioˈg̊ʰesə]	[iʁ̞oˈkʲesʌ̟]
[boliviˈansk]	[ḅɔliviˈɛnsg̊]	[ḅo̞liviˈɛns̪k]	[ḅoliviˈɑ̃̃nsk]	[ḅolʲiviˈɛnsg̊]
[ˈsko̞lə]	[ˈskɔlə]	[ˈs̪ko̞ˑlə]	[ˈsg̊o̞ˑlə]	[ˈsg̊ʰoːlə]
[ˈko̞nə]	[ˈkɔnə]	[ˈkoːn̪ə]	[ˈg̊ʰœˑnə]	[ˈg̊ʰo̞ːnə]
[ˈpiskəfløl̥ʲ]	[ˈpisg̊əˌflø̞ːð̠ˠ˕ə]	[ˈpis̪kəˌflø̞ːð̠ˠ˕ə]	[ˈḅʰisg̊əˌfløˑð̠ˠ˕ə]	[ˌḅʰisg̊əˈflø̞ːð̠ˠ˕ə]
[g̊ʰo̞ʁəg̊ˈtuɐ̯]	[kɔəg̊ˈt̪uɐ̯]	[koʁ̞əkˈtuɐ̯]	[g̊ʰo̞ʁ̞əg̊ˈd̥͡suɐ̯]	[g̊ʰɔˈeg̊d̥͡suˀ]
[ˈn̪oˑsk]	[ˈnɔsg̊]	[ˈn̪os̪k]	[ˈnoˑsg̊]	[ˈnɔ̞sg̊]
[ḅʰäˈḅʰiᵃ]	[papiɐ̯]	[paˈpiɐ̯]	[paˈpiɐ̯]	[päˈḅiɐ̯]
[ˈʁ̞iˑˌ d̪om]	[ˈʁ̞id̥əm]	[ˈʁ̞iˌd̥ʌ̟m]	[ˈɹiːd̥ɔm]	[ˈʁ̞iˌd̥ʌ̟m]
[ˈfʁ̞ek]	[ˈfʁ̞ɛg̊]	[ˈfʁ̞ɛg̊]	[ˈfʁ̞aˠ]	[ˈfʁ̞ag̊]
[ˈrʲis]	[ˈʁ̞iˀs]	[ˈʁ̞iss̪]	[ˈʁ̞iːs]	[ˈʁ̞iˀs]
[ˈba̟ɐ̯]	[ˈbɛɐ̯]	[ˈḅɛɐ̯]	[ˈḅɛɐ̯]	[ˈbɛɐ̯ˀ]
[ˈg̊ʰi ɐ̯kə]	[ˈkiɐ̯kə]	[ˈkikə]	[ˈg̊ʰi ɐ̯g̊ə]	[ˈg̊ʰiɐ̯g̊ə]
[ˈmoˑ]	[ˈmo̞ɐ̯]	[ˈmo̞ɐ̯]	[ˈmoɐ̯]	[ˈmo̞ɐ̯]
[ˈḅʰʁ̞esə]	[ˈḅʰʁ̞asə]	[ˈḅʰʁ̞ɛs̪ə]	[ˈḅʰʁ̞asə]	[ˈḅʰʁ̞asə]
[ˈlyŋgby]	[ˈlʏŋḅy]	[ˈɬʏŋbʏ]	[ˈlyŋḅy]	[ˈlyŋby]
[säu̯nə]	[säu̯nə]	[s̪äu̯n̪ə]	[säu̯nə]	[s̪äu̯n]
[ˈʁ̞uːe]	[ˈʁ̞yə]	[ˈʁ̞ʏɣə]	[ˈʁ̞yə]	[ˈʁ̞yːə]
[ɕog̊oˈlalʲ]	[ɕog̊oˈlɛːð̠ˠ˕ə]	[ɕokoˈlɛˑð̠ˠ˕ə]	[ɕokoˈlɛð̠ˠ˕]	[ɕog̊oˈlɛːð̠ˠ˕ə]
[ʁ̞uˈtiːnə]	[ʁ̞uˈtiːnə]	[ʁ̞uˈd̥͡siˑn̪ə]	[ʁ̞uˈd̥͡siːnə]	[ʁ̞ʊˈd̥͡siːnə]
[ˈḅäːsg̊]	[ˈḅäːsg̊]	[ˈḅäsk]	[ˈḅäːsg̊]	[ˈbäːsg̊]
[ˈtoj]	[ˈt̪ʌ̟j]	[ˈto̞j]	[ˈd̥͡sʌ̟j]	[ˈtʌ̟j]
[ˈçœu̯]	[ˈsjɔu̯]	[ˈs̪jo̞u̯]	[ˈɕœu̯]	[ˈçɵu̯]
[omˈtolili]	[ømˈtɔləli]	[ʉmˈt̪ɔlʲelʲi]	[ˈœ̞mˌd̥͡sɔ̞ləli]	[œ̞mˈtɔ̞ləli]
[ˈmulʲivis]	[ˈmuliˌvis]	[ˈmulʲiˈvis]	[ˈmuːliˌviˀs]	[ˈmuːlʲivis]
[ˈg̊ɛːɐ̯nə]	[ˈgɛnə]	[ˈg̊ɛɐ̯nə]	[ˈg̊ɛːɐ̯nə]	[ˈgeɐ̯nə]
[ˈmʲœ̞ːle]	[ˈmɔˑlə]	[ˈmoːlʲə]	[ˈmo̞ːlə]	[ˈmɔːlə]
[äkupuŋˈ tuɐ̯]	[ɐkupuŋˈt̪uɐ̯]	[äkuḅʰuŋˈd̥͡suɐ̯]	[äg̊ʰuḅʰuŋˈd̥͡suɐ̯]	[ɐkʊpʊŋˈd̥͡suɐ̯]

[ˈväɡ̊d̥]	[ˈväɡ̊t̪]	[ˈvᶠɛɡ̊d̥]	[ˈväɡ̊t]	[ˈväɡ̊t]
[ˈkvota]	[ˈɡ̊ʰvot̪ə]	[ˈɡ̊ʰvo̝ːd̥ə]	[ˈɡ̊ʰvoːtə]	[ˈkvotɐ]
[ˈhäu̯n]	[ˈhäu̯nə]	[ˈhäu̯n̪ə]	[ˈhäu̯nə]	[ˈhäu̯nə]
[ˈhœ̝ne]	[ˈhœ̝ˑnə]	[ˈhœːə]	[ˈhœ̝ːnə]	[ˈhœ̝ːnə]
[ˈɡ̊ʰniu̯]	[ˈɡ̊ʰniu̯]	[ˈɡ̊ʰn̪iu̯]	[ˈɡ̊ʰniu̯]	[ˈɡ̊ʰniu̯]
[ˈkɔ̝ᶭʲe]	[ˈkɔə]	[ˈkoə]	[ˈɡ̊ʰɔə]	[ˈɡ̊ʰɔ̝ːə]
[ˈuːə]	[ˈuːə]	[ˈuːə]	[ˈuːə]	[ˈuːᵊ]
[ɡ̊ʰo̝ˈʁ̞ɔubt]	[kɔˈʁ̞ub̥t̪]	[koˈʁ̞ub̥d̥]	[ɡ̊ʰoˈʁ̞ʌb̥t]	[ɡ̊ʰoˈʁ̞ub̥t]
[ˈbʁ̞eu̯]	[ˈb̥ʁ̞eu̯]	[ˈb̥ʁ̞eu̯]	[ˈb̥ʁˠeu̯]	[ˈb̥ʁ̞ɛu̯]
[ˈtœ̝klɛʲə]	[ˈt̪œ̝ɡ̊ʰleˑð̠ˠ̝ə]	[ˈd̥͡sœ̝ːɡ̊ʰleːð̠ˠ̝ə]	[ˈd̥͡sʏɐ̯ɡ̊ʰleːð̠ˠ̝ə]	[ˈd̥͡sœ̝ɡ̊ʰˌleːð̠ˠ̝ə]
[ˈmunn]	[ˈmʉnə]	[ˈmun̪ə]	[ˈmunə]	[ˈmunə]
[ˈtið̠l̚id̥]	[ˈt̪ið̠ˠ̝lit̪]	[ˈd̥͡sid̪lit]	[ˈd̥͡sið̠ˠ̝li]	[ˈd̥͡sið̠ˠ̝lʲɪd̥]
[fizioloˈgiˀ]	[fyɕiɔlɔˈɡ̊i]	[fyzɪoloˈgi]	[fɪzɪoloˈɡ̊i]	[fysio̝lo̝ˈgiˀ]
[ˈvekə]	[ˈvekə]	[ˈvekə]	[ˈvɛkə]	[ˈveɡ̊ə]
[fʌ̝ˈskeli]	[fɔˈskeli]	[fʌ̝ˈskeli]	[fɐˈsɡ̊eli]	[fəˈskeli]
[ˈtʁ̞yke]	[ˈt̪yɡ̊ə]	[ˈtʁuɡ̊ə]	[ˈd̥͡sʁ̞yɡ̊]	[ˈd̥͡sʁ̞yɡ̊ə]
[beˈʁ̞ɛlskɛb]	[ˈb̥eˠɛð̠ˠ̝ˌsɡ̊ɛb̥]	[ˈb̥eeskɐb̥]	[b̥ɛˈʁ̞ɛd̥ˌsɡ̊ɛb̥]	[b̥eˈʁ̞ɛð̠ˠ̝ˌsɡ̊ɛp]
[pɪd̪ɐˈgoˑɡ̊]	[pedɐˈɡ̊ou̯]	[ped̥a̝ˈɡ̊o̝u̯ˀ]	[ped̥ɐˈɡ̊o̝u̯]	[ped̥ɐˈɡ̊ou̯ˀ]
[nɛɐ̯vø̝siˈtet]	[nɛvø̝siˈt̪e̝]	[n̪əvø̝siˈd̥͡se̝t]	[nɛvø̝siˈd̥͡se̝ˀd̥]	[nəvø̝siˈd̥͡se̝ˀt]
[ˈɬɛze]	[ˈleːsə]	[ˈleˑsə]	[ˈleːsə]	[ˈlesə]
[ˈfizisɡ̊]	[ˈfysisɡ̊]	[ˈfyzisɡ̊]	[fyˈzisɡ̊]	[ˈfysisɡ̊]
[ˈo̝ŋd̪omʲe ˌli]	[ɔ̝ŋˈdɔməli]	[ˈuŋd̪omli]	[ʉŋd̥ɵmeˈli]	[ʊŋˈd̪oməli]
[ˈɡ̊ʰyse]	[ˈkø̝sə]	[ˈk ø̝sə]	[ˈkø̝sə]	[ˈɡ̊ʰysə]
[ˈɡ̊ʰø̝ːbe]	[ˈkø̝ˑb̥ə]	[ˈkø̝ˑb̥ə]	[ˈɡ̊ʰø̝ːb̥ə]	[ˈɡ̊ʰø̝ːb̥ə]
[ˈd̥ɹ̥aŋɡ̊]	[ˈd̥ʁ̞ɛŋ]	[ˈd̥ʁ̞aŋ]	[ˈd̥ʁ̞aŋɡ̊]	[ˈd̪ʁɛŋ]
[nø̝lˈvend̪i]	[ˈnø̝ð̠ˠ̝vend̥i]	[n̪ø̝ð̠ˠ̝ˈven̪dʲi]	[nø̝ð̠ˠ̝ˈvenˀd̥i]	[nø̝ð̠ˠ̝ˈvend̪i]
[ped̥aˈɡ̊ogisk]	[ped̥a̝ˈgogisɡ̊]	[ped̥ɐˈgoisk]	[ped̥ɐˈɡ̊oːɡ̊isɡ̊]	[ped̥ɐˈɡ̊o̝ɡ̊isɡ̊]
[ˈsmoˑ]	[ˈsmœ̝]	[ˈsmœ]	[ˈsmʲœɐ̯]	[ˈsmœ̝ˀ]
[ˈlø̝kʲe]	[ˈluɡ̊ə]	[ˈlu̢kə]	[ˈluɡ̊ə]	[ˈɬuɡ̊ə]
[ˈd̪ʁ̞ɔ̝med̪aˑ]	[ˈd̥ʁ̞ɔˑməd̥ä]	[ˈd̥ʁ̞oməd̥ä]	[ˈd̪ʁ̞ɔməd̪a]	[ˈd̪ʁ̞ɔ̝məd̪ɐ]
[b̥ɔ̝wˈmesd̥ʌ̝]	[ˈb̥ɔ̝mesd̥ʌ̝]	[ˈb̥ɔ̝wˌmesd̥ʌ̝]	[ˈb̥ɔ̝wmesd̥ʌ̝]	[ˈb̥ɔ̝ɐ̯ˌmesd̥ʌ̝]
[ˈnɛmee]	[ˈnɛɐ̯mʌ̝]	[ˈn̪ɛɐ̯mə]	[ˈnɛɐ̯mʌ̝]	[ˈnɛɐ̯mʌ̝ʌ̝]
[ˈstɔ̝ˑmə]	[ˈsd̥ɔ̝ːmə]	[ˈstɔmə]	[ˈstɔ̝ːmə]	[ˈst̪ɔ̝ːmə]
[ˈʌ̝n̪ʌ̝]	[ˈʌ̝nʌ̝]	[ˈʌ̝nə]	[ˈɔ̝ntə]	[ˈɔ̝nʌ̝]

D 6	D 11	D 12	D 13
[pa̝n̪ə]	[b̥ʰa̝nə]	[pa̝n̪ə]	[pan̪ə]
[ˈd̪yn̪ə]	[ˈd̥ynə]	[ˈd̪yn̪ə]	[ˈdyn]
[ˈkɛɐ̯liˌhe̝ð̠ˠ̝]	[ˈɡ̊ʰɛɐ̯liˌhe̝ð̠ˠ̝]	[ˌkeliˈhe̝ð̠ˠ̝]	[ˈkɛliˌxəlʲ]
[ut̪akˈnɛmli]	[ˈud̥͡säɡ̊ˌnemli]	[utakˈnɛmɛli]	[ˈut̪ɐkˌn̪emli]

[ˌba̞ð̠ˠ̞əˈvɛls̪ə]	[ˈb̥ɛð̠ˠ̞əˌvɛɐ̯lsə]	[ba̞əˈvɛls̪ə]	[ˈba̞ð̠ˠ̞əˌvɛʁ̞əls̪ə]
[ˈmäŋglə]	[ˈmäŋlə]	[ˈmäŋglə]	[ˈmanglə]
[ˈy̥äː]	[ˈfa̞ːə]	[ˈfɛə]	[ˈfa]
[ˈo̞nˌsg̊ɛp]	[ˈo̞nˌsg̊ɛb̥]	[ˌənˈsg̊ɛb̥]	[ˈo̞n̪ˌs̪g̊a̞p]
[ˈs̪oᵊːfɐ]	[ˈsoːfa̞]	[ˈs̪oᵊːfɐ]	[ˈs̪ofɐ]
[ˈʁ̞a̞ə]	[ˈʁ̞äːə]	[ˈɹäə]	[ˈra]
[bəˈs̪t̪emə]	[b̥e̞ˈsd̥emə]	[bəˈs̪t̪emə]	[bəs̪ˈt̪imə]
[ˈhɔb̥ə]	[ˈhʌ̞b̥ə]	[ˈhɔb̥ə]	[ˈhop]
[d̥ɔ̞m]	[d̥ɔ̞m]	[dum]	[d̪um]
[sg̊äːb̥]	[sg̊äːb̥]	[sg̊äːp]	[s̪kap]
[ˈg̊ʰɛɐ̯sd̥əʁ̞ʌ̞]	[ˈg̊ʰɛɐ̯ʌ̞sd̥əʁ̞ə]	[ˈg̊ʰɛʁ̞ɛsd̥əə]	[ˈkɛrɛs̪d̥ərə]
[s̪t̪om]	[sd̥ɔ̞m]	[s̪t̪om]	[sd̥om]
[ɛɐ̯ˈkenə]	[ˈɛɐ̯g̊ʰənə]	[ˈɛɐ̯kənə]	[əˈkɛn̪ə]
[ˈs̪ʏt̪ən]	[ˈs̪yd̥n]	[ˈs̪ʏtən]	[ˈs̪ʲyten]
[ˈs̪t̪ʁ̞ɛð̠ˠ̞ə]	[ˈsd̥ʁ̞ið̠ˠ̞ə]	failed	[ˈs̪t̪rið̠ə]
[ˈgafəl]	[ˈg̊äfəl]	[ˈga̞fəl]	[ˈgafl]
[ˈkin̪ə]	[ˈkinə]	[ˈkinə]	[ˈkin̪ɐ]
[ˈhɛð̠ˠ̞ə]	[ˈha̞ᶞ̊ə]	[ˈhɛð̠ˠ̞əd̥]	[ˈhɛð̠ˠ̞əd̥]
[ˈvas̪kət]	[ˈva̞skʲəð̠ˠ̞]	[ˈvaskət]	[ˈvas̪kəl]
[ˈbin̪ə]	[ˈb̥e̞nə]	[ˈbinə]	[ˈbin̪ə]
[äb̥äˈʁ̞ät]	[äb̥äˈʁ̞äd̥͡s]	[äb̥äˈʁ̞ät]	[apaˈrad̥]
[bɐˈg̊aˑʐə]	[b̥ɐˈg̊ɑʐ]	[bɐˈga̞ˑʐ]	[bɐˈgaʐə]
[pɐˈn̪ɛə]	[ˈpa̞nəə]	[pəˈnɛə]	[pɐˈn̪eɐ]
[bɪˈslag̊tət]	[b̥ɪˈslɛg̊d̥͡səd̥͡s]	[bɛˈslɛtət]	[bɪˈs̪leg̊ʈəl]
[ˌfɔˈb̥e̞ləð̠ˠ̞ə]	[ˈfɔ̞ːˌb̥e̞ləð̠ˠ̞ə]	[ˌfəˈbe̞ləð̠ˠ̞ə]	[ˈfɔ̞bɪlərə]
[əˈlɛˑnə]	[a̞ˈle̞ːnə]	[əˈlɛˑnə]	[ɐˈlen̪ə]
[ˈma̞ð̠ˠ̞]	[ˈma̞ ð̠ˠ̞]	[ˈma̞]	[ˈmɛl]
[ˈs̪in̪ə]	[ˈse̞ːnə]	[ˈse̞nə]	[ˈs̪ɛn̪ə]
[ˈfals̪k]	[ˈfalsg̊]	[ˈfa̞lsg̊]	[ˈfalsg̊]
[ˈb̥uᵊ]	[ˈb̥uə]	[ˈb̥uᵊ]	[ˈbuə]
[ˈd̪ɔən]	[ˈd̥ɔ̞u̯n]	[ˈdɔn]	[ˈd̥ɔ̞ən]
[ˈgʲe mə]	[ˈg̊emə]	[ˈge mə]	[ˈgɛmə]
[ˈgans̪kə]	[ˈg̊änsg̊ə]	[ˈga̞nsg̊ə]	[ˈgan̪s̪kə]
[ˈflamə]	[ˈflämə]	[ˈfla̞mə]	[ˈfläm]
[ˈg̊ulᶠ]	[ˈg̊ulᶠ]	[ˈgulᵛ]	[ˈgul]
[bɪˈgäi̯sd̥ʁ̞əð̠ˠ̞]	[b̥ɪˈgäi̯sd̥ʁ̞əd̥͡s]	[bɪˈgejstʁ̞ət]	[bɪˈgajstrəl]
[ˈs̪kin̪ə]	[ˈs̪kinə]	[ˈskinə]	[ˈs̪kin̪ə]
[ˈxɛmɛlit]	[ˈhiməlihəð̠ˠ̞]	[ˈheməlid̥]	[ˈxɛmɛlit]
[ˈfilm]	[ˈfilm]	[ˈfiɫm]	[ˈfilm]
[ˈvilə]	[ˈvilə]	[ˈvild̪ə]	[ˈvil]

[ˈkaj]	[ˈɡʰ äi̯]	[ˈkaj]	[ˈkäj]
[ˈxumʊʂ]	[ˈhu̯mus]	[ˈhumus]	[ˈxumuʂ]
[vɪˈka]	[viˈkä]	[vɪˈka]	[viˈka]
[ˈliʊli]	[ˈliu̯li]	[ˈliʊli]	[ˈliʊlɪ]
[ˈʂkriə]	[ˈsɡ̊ɻivə]	[ˈskɪivə]	[ˈʂkrivə]
[ˈɖaj]	[ˈɖei̯]	[ˈdaj]	[ˈɖaj]
[ˈœðˠ]	[ˈjo̯l]	[ˈjəðˠ]	[ˈjə]
[ø̞koloˈgi]	[ø̞ɡ̊ʰo̞lo̞ˈɡ̊i]	[ø̞ɡ̊ʰo̞lo̞ˈgi]	[əˈkologɪ]
[ɖɪˈʈaljə]	[ɖɪˈɖ͡ʂa̤ljə]	[ɖɪˈʈaljə]	[ɖɪˈʈaljə]
[ˈkiʂəˌbʲɛɻ]	[ˈɡ̊ʰiɐsəˌb̥ɛɻ]	[ˈkiɹsəˌbɛɻ]	[ˈkirʂəˌbeə]
[ˈlɛŋgə]	[ˈleŋə]	[ˈlɛŋə]	[ˈɬɛngə]
[ˈbopəl]	[ˈb̥oˌpel]	[ˈb̥opɛl]	[ˈboˌpel]
[mɔˈʂkɪ]	[mɔ̹ˈsɡ̊əˀ]	[məˈʂkɪ]	[moˈʂke]
[ˈkuˑlə]	[ˈɡ̊ʰulə]	[ˈkulə]	[ˈkulʲe]
[ˈɬamˌkø̞ðˠ]	[ˈlämə̤ˌɡ̊ʰø̞l]	[ˈla̤mˌkø̞]	[ˈlämə̤ˌɡ̊ʰ əl]
[ˈbaŋkʲə]	[ˈb̥äŋɡ̊ə]	[ˈb̥äŋkʲɛ]	[ˈbäŋkʲe]
[ˈʂmɛðˠ ə]	[ˈsmą̈ðˠ ɤʌ̹]	[ˈʂmą̈ðˠɪɛ]	[ˈʂmaᵟrə]
[ˈkuˑɳə]	[ˈɡ̊ʰɲə]	[ˈkɵnə]	[ˈkuɳə]
[ˈɳɛʂd̥ə]	[ˈnesd̥ə]	[ˈnesd̥ə]	[ˈɳɛʂɖə]
[ˈgäŋə]	[ˈɡ̊äŋə]	[ˈgäŋgə]	[ˈgɑŋgə]
[ˈɡ̊oðˠ]	[ˈɡ̊o̞ðˠ]	[ˈgo]	[ˈgo̞]
[ˈɡ̊œˑ]	[ˈɡ̊œː]	[ˈɡ̊ɶ]	[ˈgʲɵ]
[ˈmɛɳɛʂkə]	[ˈmenəsɡ̊ə]	[ˈmɛnɛskɛ]	[ˈmɛɳɛʂkə]
[ˈbaŋ]	[ˈb̥äŋ]	[ˈbaŋ]	[ˈbaŋk]
[irokɪˈʂeə]	[iɻoˈɡ̊ʰesʌ̹]	[iɻoˈɡ̊ʰesə]	[ɪroˈkeˑzə]
[boˈliviənsk]	[b̥oˈliviənsɡ̊]	[b̥olivi̯ˈansɡ̊]	[boˈlivɪənʂk]
[ˈʂkole]	[ˈsɡ̊olə]	[ˈskolɛ]	[ˈʂkọˑlə]
[ˈkoˑɳə]	[ˈɡ̊ʰonə]	[ˈɡ̊ʰɵnə]	[ˈkoɳə]
[ˈpiʂkəˌfloˑðˠ]	[ˈb̥ʰisɡ̊əˌfl̥ø̞l]	[ˈb̥ʰisɡ̊əˌfl̥ø̞ðˠə]	[ˈpiʂkəˌfɬøl]
[koɻəkˈʈuɻ]	[ɡ̊ʰɔʁəɡ̊ˈɖ͡suɐ̯]	[ɡ̊ʰəɹˈktuɪ]	[korəkˈʈu]
[ˈɳoˑʂk]	[ˈnɔːsɡ̊]	[ˈnɔsk]	[ˈɳoʂk]
[pɐˈpiɐ̯]	[b̥ʰäˈb̥ʰiɐ̯]	[papiə]	[paˈpiɐ̯]
[ˈriɖəm]	[ˈʁiˌɖʌ̹m]	[ˈɹidɔm]	[ˈɾiˌdom]
[ˈfɻaɡ̊]	[ˈfɻaɡ̊]	[ˈfɪɛk]	[ˈfrɛk]
[ˈɻiʂ]	[ˈɻis]	[ˈris]	[ˈɾiʂ]
[ˈb̥ɛɐ̯]	[ˈb̥ɛɐ̯]	[ˈb̥ɛɐ̯]	[ˈbɛɐ̯]
[ˈkʲiɻkə]	[ˈɡ̊ʰiɐ̯ɡ̊ə]	[ˈɡ̊ʰikə]	[ˈkiɪkə]
[ˈmo]	[ˈmo̞ɐ̯]	[ˈmo]	[ˈmo]
[ˈpɻɛʂə]	[ˈb̥ʰɻasə]	[ˈb̥ʰɹɛsə]	[ˈprɛʂə]

[ˈlyŋb̥y]	[ˈlyb̥y]	[ˈlyŋb̥ʏ]	[ˈlyŋgby]
[s̪äu̯nə]	[säu̯nə]	[s̪äu̯nə]	[säu̯nə]
[ˈryə]	[ˈʁ̝yə]	[ˈʁuə]	[ˈrʏə]
[ʂəkoˈlɛð̠ˠə̝]	[ɕog̊oˈlɛːð̠ˠ̝ ə]	[tʃokoˈlɛə]	[ʃokoˈlɛl]
[ruˈt̪ʲiːnə]	[ʁ̝uˈd̥͡sinə]	[ɹuˈtinə]	[ruˈtiˑn̪ə]
[ˈb̥äs̪g̊]	[ˈb̥äːsg̊]	[ˈbas̪k]	[ˈbaɹsk]
[ˈt̪oj]	[ˈd̥͡sʌ̝j]	[ˈtoj]	[ˈtɵj]
[ˈçɵu̯]	[ˈɕɔ̝u̯]	[ˈʂɵu̯]	[ˈsjɔu̯]
[ʊmˈt̪oləli]	[omˈd̥͡sɔ̝ləli]	[ˌɵmˈtɔləli]	[ømˈtɵlʲelʲi]
[ˈmuˑlʲiˌvis̪]	[ˈmuliˌviˀs]	[ˈmulʲivis]	[ˈmulʲɪvɪs̪]
[ˈg̊ɛˑnə]	[ˈg̊ɛɐ̯nə]	[ˈg̊ɛənə]	[ˈgɛnə]
[ˈmo̝ˑlə]	[ˈmɔ̝lə]	[ˈmɵˑlə]	[ˈmolʲe]
[ɐkupuŋˈt̪uɐ̯]	[äg̊ub̥ʰuŋˈd̥͡suɐ̯]	[äkupuŋˈtu]	[ˈäkupuŋˌʈu]
[ˈväg̊t]	[ˈväg̊d̥͡s]	[ˈväg̊t]	[ˈvɛg̊ʈ]
[ˈkvoˑtə]	[ˈg̊ʰvod̥͡sɐ]	[ˈg̊ʰvod̥ə]	[ˈkvot̪ə]
[ˈhɛu̯nə]	[ˈhäu̯nə]	[ˈhɛu̯nə]	[ˈxau̯nə]
[ˈhœ̝ˑnə]	[ˈhœ̝ːnə]	[ˈhœ̝nə]	[ˈhœːnə]
[ˈg̊ʰniu̯]	[ˈg̊niu̯]	[ˈg̊ʰniv]	[ˈg̊ʰniu̯]
[ˈkɔg̊ə]	[ˈkɔə]	[ˈg̊ʰɔə]	[ˈkoə]
[ˈuːə]	[ˈuːə]	[ˈuə]	[ˈuə]
[koˈʁ̝ub̥t]	[g̊ʰoˈʁ̝ub̥d̥͡s]	[g̊ʰoˈɹub̥t]	[koˈrupt]
[ˈb̥reu̯]	[ˈb̥ʁ̝eu̯ˀ]	[ˈb̥ɹeu̯]	[ˈbrɛu̯]
[ˈd̥͡sɵg̊lɛˑð̠ˠ̝ə]	[ˈd̥͡sœ̝g̊ləl]	[ˈtœ̝kleə]	[ˈʈœkləl]
[ˈmɔˑnə]	[ˈmunə]	[ˈmunə]	[ˈmunʈ]
[ˈt̪ʲið̠ˠ̝lit̪]	[ˈd̥͡sið̠ˠ̝lid̥͡s]	[ˈtilit]	[ˈʈilli]
[fɪzɪoloˈg̊i]	[fysioloˈg̊i]	[fyzioloˈgi]	[fɪsɪoloˈgi]
[ˈvɛkɛ]	[ˈveg̊ə]	[ˈveke]	[ˈvekə]
[fəˈs̪g̊eli]	[fʌ̝ˈsg̊elˀi]	[ˌfoˈsg̊eli]	[fɔˈs̪keli]
[ˈt̪ryg̊ə]	[ˈd̥͡sʁ̝yg̊ə]	[ˈtɹʊg̊ə]	[ˈʈrʏkə]
[bɛˈrɛð̠ˠ̝ˌs̪g̊ɛb̥]	[b̥əˈʁ̝ɛd̥ˌsg̊ɛb̥]	[ˈb̥eɛˌsg̊ɛb̥]	[bɪˈɾelskəb]
[ped̪ɐˈg̊o̝u̯]	[ped̥ˈɐg̊ou̯]	[pedɐˈgog]	[pdɐˈgog]
[nɛvø̝siˈd̥͡se̝ˀd̥]	[nəˈvɜsisd̥əd̥]	[nɛvœsiˈtet]	[nəɹvɘsɪˈtɛl]
[ˈɫeˑs̪ə]	[ˈlesə]	[ˈlɛs̪ə]	[ˈlɛˑzɛ]
[fyˈzis̪k]	[ˈfysisg̊]	[ˈfysisg̊]	[ˈfysisg̊]
[ʊŋgˈd̪omeli]	[əŋˈd̥ʌ̝məli]	[ʊŋˈd̥oməli]	[ʊŋgˈd̪oməli]
[ˈkø̝ˑs̪ə]	[ˈg̊ʰysə]	[ˈg̊ʰysə]	[ˈkys̪ə]
[ˈkø̝bə]	[ˈg̊ʰø̝b̥ə]	[ˈg̊ʰø̝ːb̥ə]	[ˈkø̝b̥ə]
[ˈd̥ʁ̝aŋʲ]	[ˈd̥ʁ̝aŋ]	[ˈd̥ɹaŋ]	[ˈd̪rɛŋk]
[nø̝lˈvenli]	[nø̝lˈvenli]	[nøˈwendi]	[ˌnotˈvendʲi]
[ped̥ɐˈg̊og̊is̪k]	[b̥ʰed̥ɐˈgoisg̊]	[pedɐˈgogisg̊]	[ped̪ɐˈgoigsk]

[ˈsmʲœ]	[ˈsmœɐ̯]	[ˈsmo]	[ˈsmœ]
[ˈlɔɡə]	[ˈlɔ̟ɡə]	[ˈlɔ̟ɡə]	[ˈlʊkɛ]
[ˈɡromədɐ]	[ˈɡʱɔmeɡɐ]	[ˈdɹomədɐ]	[ˈɡromədɐ]
[bɔˈmiʂtə]	[ˈbɔwmesd̠ˌ]	[bɔsˈmestə]	[ˈbɔɹkˌmaəstəɹ]
[ˈnɛmɛə]	[ˈnɛɐ̯mˌ]	[ˈnemeə]	[ˈnɛmɛɹə]
[ˈstɔmə]	[ˈsɡ͡sɔm]	[ˈʂdɔˑmə]	[ˈstɔɹmə]
[ˈɔnə]	[ˈɔ̟nə]	[ˈond̥ə]	[ˈɵnd̥ə]

Appendix 21. Transcriptions of the diphthong and word stress targets in the R-group

R 1	R 4	R 5	R 6	R 7
[ˈb̥ilist]	[ˈb̥ilisd̥]	[ˈb̥ilisd̥]	[ˈb̥ilisd̥]	[bɨˈlisd̥]
[ɪvenˈt͡syɸəðɤ̆]	[ɪvənˈɖ͡syɸəðɤ̆]	[ˈɐ̟vənɖ͡suɸəðɤ̆]	[ɪvənˈɖ͡syɸəðɤ̆]	[əvənˈɖ͡syɸəðɤ̆]
[ˈɡ̊ʰvɐ̟nəli]	[ˈɡ̊ʰvɐ̟nəli]	[ˈkvɐ̟nəli]	[ˈɡ̊ʰvinəli]	[ˈɡ̊ʰvinəli]
[ˈuˌhelt]	[ʊˈxʲel]	[ˈuˌxʲel]	[ʊˈxʲel]	[ˈuhel]
[kaˈjak]	[ɡ̊ʰɐˈjäɡ̊]	[kɐˈjäk]	[ɡ̊ʰɐˈjäɡ̊]	[ɡ̊ʰɐˈjäɡ̊]
[misˈt͡säŋɡ̊ə]	[misˈt͡säŋɡ̊ə]	[ˈmist͡säŋkə]	[misˈt͡säŋɡ̊ə]	[misˈt͡säŋɡ̊ə]
[ˈsɔ̟ːˌb̥ä]	[ˈsɔ̟ːˌb̥ä]	[ˈʂɔ̟ːˌb̥ä]	[ˈsɔ̟ːˌb̥ä]	[ˈsɔ̟ːˌb̥ä]
[misˈt͡seŋˌsɔm]	[miʂˈɖ͡seŋˌsʌ̟m]	[miʂˈt͡seŋʂʌ̟m]	[miʂˈɖ͡seŋˌsʌ̟m]	[misˈɖ͡seŋˌsʌ̟m]
[b̥ɐ̟ˈab̥ajdə]	[ˈb̥ɪäb̥äjɖə]	[ˈb̥eɐ̯ˌb̥äjð̠ə]	[ˌb̥ɪˈäb̥äjɖə]	[ˌb̥ɪˈäb̥äjɖə]
[ɡ̊eˈbyˀɐ̯]	[ɡ̊ɪˈpyɐ̯]	[ɡ̊ɪˈb̥yɐ̯]	[ɡ̊ɪˈb̥yɐ̯]	[ɡ̊ɪˈb̥yɐ̯]
[ˈuˌkent]	[ʊˈɡ̊ʰend̥]	[ˈuˌɡ̊ʰent]	[ʊˈɡ̊ʰend̥]	[ˈuˌɡ̊ʰend̥]
[ˈsɡ̊jultə]	[ˈsɡ̊ʰjultə]	[ˈʂɡ̊ʰjultə]	[ˈskjulɖə]	[ˈsɡ̊julɖə]
[ɡ̊ɸäˈfiɡ̊]	[ɡ̊ɸäˈfiɡ̊]	[ɡ̊ɸäˈfiɡ̊]	[ɡ̊ɸäˈfiɡ̊]	[ɡ̊ɸäˈfiɡ̊]
[ˈsʲœwnˌløs]	[ˈʂʲɵənˌløs]	[ˈʂɵwnˌløʂ]	[ˌʂʲɵwnˈløs]	[ˈsœwnˌløs]
[vioˈliˀn]	[vioˈlin]	[vioˈlin]	[vioˈlin]	[ɣioˈlin]
[ɸisˈtiːɸə]	[ɡ̊ʰɸɨɖiˈsʲiʌ̟]	[kɸɨɖiˈseʌ̟]	[ɡ̊ʰɸɨɖiˈseʌ̟]	[ɡ̊ʰɸɨɖɪˈseɸʌ̟]
[ˈjysɡ̊]	[ˈjysɡ̊]	[ˈjysɡ̊]	[ˈjysɡ̊]	[ˈjysɡ̊]
[ˌuˈhelʲi]	[uˈheld̥i]	[ˈuˌheld̥i]	[uˈheld̥i]	[uˈheld̥i]
[ˈb̥ilist]	[ˈb̥ilisd̥]	[ˈb̥ilisd̥]	[ˈb̥ilisd̥]	[ˈb̥ilisd̥]
[ɸɡ̊oˈnomisɡ̊]	[ɸɡ̊oˈnomisɡ̊]	[ɸkəˈnomisk]	[ɸɡ̊oˈnomisɡ̊]	[ɸɡ̊oˈnomisɡ̊]
[ˈb̥äːnd̥om]	[ˈpäːnd̥ʌ̟m]	[ˈb̥äːnd̥ʌ̟m]	[ˈbäːnd̥ʌ̟m]	[ˈbäːnˌd̥ʌ̟m]
[ˈjuːləfesd̥]	[ˈjuləˈfesd̥]	[ˈjuləˌfesd̥]	[ˌjuləˈfesd̥]	[ˈjuləˈfesd̥]
[tyvæˈɸiˀ]	[t͡sywe'ʔi]	[t͡sywe'ɸiˀ]	[ɖ͡sywʌ̟'ɸiˀ]	[ɖ͡sywe'ɸiˀ]
[uˈmuːlid̥]	[uˈmulit]	[uˈmuːlit]	[uˈmuːlit]	[uˈmuːlit]
[ˈb̥ɛjˌefdtʌ̟]	[ˈb̥ejˈefd̥ʌ̟]	[ˈb̥ejˈefd̥ʌ̟]	[ˌb̥ejˈefd̥ʌ̟]	[ˌb̥ejˈefd̥ʌ̟]
[ˌjewnˈaldɸənə]	[ˈjewnˌhɑ̟ld̥ʔənə]	[ˈjewnˌɑ̟lɸənə]	[ˌjjewnəˈldˈɸɛnə]	[ˌjewnˈɑ̟ld̥ɸənə]
[ˌfemʌ̟ˈt͡sɸejeje]	[ˈfemʌ̟ˈɖ͡sʔaðɤ̆və]	[ˈfemʌ̟ˈɖ͡sɸaðɤ̆və]	[ˌfemʌ̟ˈɖ͡sɸɛðɤ̆vəˌ]	[ˌfemə'ɖ͡sɸaðɤ̆və]
[yˈt͡sɸeŋsˌfɸiˈhəðɤ̆]	[ˌyd̥ʔeŋsˈfɸihəðɤ̆]	[ˌyt͡sʁiŋsˈfʁihəðɤ̆]	[yɖ͡sˌɸiŋsˌfɸiˈhəðɤ̆]	[ˈyd̥ɸɪŋsˌfɸihəðɤ̆]

[ˈɖiˈɻagʈə]	[ɖɪˈɻɛgtə]	[ɖɪˈʁɛgɖə]	[dɪˈɻɛgtə]	[ɖɪˈɻɛgtə]
[ˈaɭˌɻɛːɠˌə]	[ˈaɭɻəðˠə]	[ˈaɭʁəðˠə]	[ˈaɭɻəðˠə]	[ˈaɭɻəðˠə]
[ˈɓäːnəˌvɻwn]	[ˈɓäːnəˌvɻwn]	[ˈɓäːnəˌvɻwn]	[ˈbäːnəˌvɻwn]	[ˈɓäːnəˌvɻwn]
[ˈanəðˠˌsɓɻosɓʰeɖɐˈgoɯisk]	[ˈaɳəðˠˌsɓɻoɓʰeɖɐˌgogik]	[ˈaɳəðˠˌsɓɻopeɖɐˈgogik	[ˌaɳəðˠˌsɓɻoɓʰeɖɐˈgogik]	[ˌaɳəðˠˌsɓɻosɓʰeɖɐgoˈgik]
[ˈlɻwˌgiwnɪŋ]	[ˈlɻwˌgiwnɪŋ]	[ˈlɻwˌgiwnɪŋ]	[ˈlɻwˌgiwnɪŋ]	[ˈlɻwˌgiwnɪŋ]
[ˈiwnəˌsvajˀ]	[ˈewnəˌsvɛˀj]	[ˈiwnəˌsvɛj]	[ˈewnəˌsvɛj]	[ˈewnəˌswɛj]
[ˈɓʰɐːbʌ]	[ˈɓʰɐwʌ]	[ˈɓʰɐɓʌ]	[ˈɓʰiɓʌ]	[ˈɓʰiɓʌ]
[ˈäut͡soˌmɛt͡sisg̊]	[ɔtoˈmɛtisg̊]	[ɔt͡sɔˈmɛt͡sisg̊]	[äutoˈmɛtiʂg̊]	[äutoˈmɛtiʂg̊]
[ˈɖɻiwˌhuˀs]	[ˈɖɻiwˌhus]	[ˈɖɻiwˌhus]	[ˈɖɻiwˌhus]	[ˈɖɻiˀwˈhuˀs]
[ˈøwɻə]	[ˈøwɻə]	[ˈøwɻə]	[ˈøvɻə]	[ˈøwɻə]
[ˈflɻəʲu̯]	[ˈflɔjəðˠ]	[ˈflɯjəðˠ]	[ˈflɔjəðˠ]	[ˈflɔjəðˠ]
[ˈɖäjli]	[ˈtäjli]	[ˈɖäjli]	[ˈɖäjli]	[ˈɖäjli]
[ˈhujə]	[ˈhuə]	[ˈhuˌjə]	[ˈhuˌjə]	[ˈhujə]
[ˈg̊ʰiɻg̊əli]	[ˈg̊ʰiɻg̊əli]	[ˈg̊ʰiɻg̊əli]	[ˈg̊ʰiɻg̊əli]	[ˈg̊ʰiɻg̊əli]
[ˈpɛɻ]	[ˈpɛɻ]	[ˈɓʰɛɻ]	[ˈpɛɻ]	[ˈpɛɻ]
[ˈfjɻsg̊ən]	[ˈfeʂg̊ən]	[ˈfeɻsg̊ən]	[ˈfeɻsg̊ən]	[ˈfeɻsg̊ən]
[ˈɖyɻg̊ə]	[ˈɖyg̊ə]	[ˈɖyɻg̊ə]	[ˈɖyɻg̊ə]	[ˈɖyɻg̊ə]
[ˈg̊ʰœsəl]	[ˈg̊ʰøᵝsəl]	[ˈg̊ʰøᵝsəl]	[ˈg̊ʰøᵝsəl]	[ˈg̊ʰøsəl]
[ˈɶɻəðˠ]	[ˈœʔəðˠ]	[ˈøɻəðˠ]	[ˈœɻəðˠ]	[ˈœɻəðˠ]
[uɓaniˈsiɐˀ]	[ʊpɐniˈʂiʌ]	[ˈʊɓɐniseʌ]	[ʊbɐniˈʂiɻə]	[ʊɓɐniˈsɐˀʌ]
[ˈɓɔɻɖˌfalə]	[ˈɓoɖˌfalə]	[ˈboɖˌfalə]	[ˈɓoɖˌfalə]	[ˈɓoɖˌfalə]
[ˈjaɳuˌä]	[ˈjaɳuˌä]	[ˈjaɳuˌä]	[ˈjaɳuˌä]	[ˈjaɳuˌä]
[ˈjɶːnə]	[ˈjɶnə]	[ˈjɶɻnə]	[ˈjɶnə]	[ˈjɶnə]

R 9	R 10	R 12	R 13
[ˈbiliʂɖ]	[ˈɓilisɖ]	[ˈɓilisɖ]	[ˈbɐlist]
[ɪvənˈɖ͡syəðˠ]	[evənˈɖ͡syˀɻəðˠ]	[evənˈɖ͡syɻəðˠ]	[əvɪnˈɖ͡syɻəðˠ]
[ˈg̊ʰvinəli]	[ˈg̊ʰvinəli]	[ˈg̊ʰvinəli]	[ˈkvɐnəli]
[ˈuˌhel]	[ˈuˌhelʲ]	[ˌuˈhelʲ]	[ˌuˈhel]
[g̊ʰɐˈjäg̊]	[g̊ʰɐˈjäg̊]	[g̊ʰɐˈjäg̊]	[g̊ʰäˈjäg̊]
[ˈmiʂt͡säŋg̊ə]	[misˈɖ͡säŋg̊ə]	[miʂˈt͡säŋg̊ə]	[ˈmisɖ͡säŋg̊ə]
[ˈʂɔːˌɓä]	[ˈsɔːˌɓä]	[ˈʂɔːˌɓä]	[ˈsɔːˌɓä]
[miʂˈt͡seŋˌsʌm]	[misˈɖ͡seŋˌsʌm]	[miʂˈt͡seŋˌsʌm]	[misˈɖ͡seŋˌsʌm]
[ˌbeˈabajɖə]	[ˈɓɐˌäɓäjɖə]	[ˌɓeˈäɓäjɖə]	[beˈäbäjɖə]
[gɪˈbyɻ]	[g̊ɪˈɓyɻ]	[g̊ɪˈɓyɻ]	[g̊eˈɓyɻ]
[ˈuˌkʲenɖ]	[ˈuˌg̊ʰenɖ]	[ʊˈkʲenɖ]	[ˌuˈg̊ʰent]
[ˈʂg̊julɖə]	[ˈsg̊julɖə]	[ˈsg̊ʲʊlɖə]	[ˈsg̊julɖə]
[g̊ɻäˈfig̊]	[ˈg̊ɻäfɪsg̊]	[ˈg̊ɻäfɪg̊]	[g̊ɻäˈfig̊]
[ˈʂʲœwnˌløs]	[ˈsœᵘnˌløs]	[ˌʂʲɵwnˈløs]	[ˈsœwnˌløs]
[vioˈlin]	[vioˈliˀn]	[vioˈlin]	[viɔˈliˀn]
[g̊ʰɻiˌdɪˈʂiʌ]	[g̊ʰɻiˌdiˈsɐˀʌ]	[g̊ʰɻiˌdiˈʂɐʌ]	[g̊ʰɻiˌdiˈsɐɻʌ]
[ˈjysg̊]	[ˈjyˀsg̊]	[ˈjyʂg̊]	[ˈjysg̊]
[uˈxʲelɖi]	[uˈhelɖi]	[ʊˈxʲelɖi]	[uˈhelʲɖi]
[ˈɓilisɖ]	[ɓiˈlisɖ]	[ɓiˈlisɖ]	[ˈɓilisɖ]
[øg̊oˈnomisg̊]	[øg̊oˈnomisg̊]	[ɵg̊əˈnomisg̊]	[øg̊ọˈnọmisg̊]

[ˈbä:nˌɖʌm]	[ˈb̥ä:nɖ ʌm]	[ˈbä:nɖʌm]	[ˈb̥ä:nˌɖʌm]
[ˈjuləˈfesɖ]	[ˈju:ləˌfesɖ]	[ˈjuləˌfʲeʂɖ]	[ˈjuləˌfesɖ]
[ɖ͡sywɐˈʁiˀ]	[ɖ͡sywʌˈʁiˀ]	[t͡sywɐˈʁiˀ]	[ɖ͡sywʌˈʁi]
[uˈmu:lit]	[uˈmu:liɖ]	[uˈmu:lit]	[uˈmuliɖ]
[ˈb̥ejˌefɖʌ]	[ˈb̥ɛjˌefɖʌ]	[ˌb̥ejˈefɖʌ]	[ˈb̥ɛjˌeftʌ]
[ˌjewnˈalɖʁənə]	[ˈjewnˌalʁʌnə]	[ˌjewnˈalɖʁənə]	[ˈjewnˌalɖʁənə]
[ˈfemʌˈɖ͡sʁaðˠvə]	[ˈfemʌˌɖ͡sʁaðˠvə]	[ˌfemʌˈɖ͡sʁɛðˠvə]	[ˈfemʌˈɖ͡sʁaðˠvə]
[ˌyɖʁɪŋsˈfʁiˌhiðˠ]	[ˈyɖʁeŋsˌfʁihəðˠ]	[ˈyɖ͡sdʁɪŋsˌfʁihəðˠ]	[ˈʏɖˈʁiŋsˌfʁiˈhəðˠ]
[ɖɪˈʁɛɡ̊tə]	[ɖiˈʁaɡ̊ɖə]	[dɪˈʁɛɡ̊ɖə]	[ɖiˈʁaɡ̊ɖə]
[ˈʌlʁəðˠə]	[ˈʌləˌʁeðˠə]	[ˈʌlʁəðˠə]	[ˈʌlʁɛðˠˌə]
[ˈb̥ä:nəˌvɔn]	[ˈb̥ä:nəˌvɔ ᵘn]	[ˈbä:nəˌvɔwn]	[ˈbä:nəˌvɔwn]
[ˌʌnəðˠˌsb̥ʁob̥ʰeɖɐˈgogik]	[ˈʌnəðˠˈsb̥ʁosb̥ʰeɖɐˈɣo̞ɡ̊isɡ̊]	[ˌʌnəðˠˌsb̥ʁoʂb̥ʰeɖɐˈɡ̊oɡ̊ik]	[ˈʌnəðˠˌsb̥ʁospɪɖɐˈgoˌgiɡ̊]
[ˈlɔwˌgiwniŋ]	[ˈlɔwˌɡ̊iwnɐŋ]	[ˈɬowˌgiwnɪŋ]	[ˈlɔwˌgiwniŋ]
[ˈiwnˌswɛj]	[ˈjʌwnəˌsvɛj]	[ˈɛvnəˌsvɛj]	[ˈɛwnəˌsvɛ]
[ˈb̥ʰiˌb̥ʌ]	[ˈb̥ʰɐwʌ]	[ˈpiwʌ]	[ˈpɐwʌ]
[äutoˈmɛtisɡ̊]	[äuɖ͡soˈmɛɖ͡sisɡ̊]	[äutoˈmɛtiʂɡ̊]	[ɔɖ͡sɔmɐˈtisɡ̊]
[ˈɖʁiwˌhus]	[ˈɖʁiwˌhuˀs]	[ˈɖhiwhus]	[ˈdˢʁiwˌhus]
[ˈøwʁə]	[ˈøwʁə]	[ˈøvʁə]	[ˈøwʁʌ]
[ˈflɔjəðˠ]	[ˈflʌʲəðˠ]	[ˈflɔjəðˠ]	[ˈflʌʲəðˠ]
[ˈɖäjli]	[ˈɖäjli]	[ˈɖäjli]	[ˈɖäjli]
[ˈxujə]	[ˈhujə]	[ˈhuə]	[ˈhujə]
[ˈkikəli]	[ˈɡ̊ʰiɐ̯ɡ̊əli]	[ˈkiɐ̯kɐli]	[ˈɡ̊ʰiɐ̯ɡ̊əli]
[ˈb̥ʰeɐ̯]	[ˈb̥ʰɛɐ̯]	[ˈpeɐ̯]	[ˈb̥ʰɛɐ̯]
[ˈfeɐ̯ʂɡ̊ən]	[ˈfɛɐ̯sɡ̊ən]	[ˈfeɐ̯sɡ̊ən]	[ˈfɛɐ̯sɡ̊ən]
[ˈɖyːɡ̊ə]	[ˈɖyɐ̯ɡ̊ə]	[ˈɖʊɐ̯ɡ̊ə]	[ˈɖyɐ̯ɡ̊ə]
[ˈkø̞ᵉʂəl]	[ˈɡ̊ʰø̞ᵉɐ̯səl]	[ˈɡ̊ʰø̞ᵉʂəl]	[ˈɡ̊ʰø̞ɐ̯səl]
[ˈøʁəðˠ]	[ˈɶʁəðˠ]	[ˈœʁəðˠ]	[ˈɶʁəðˠ]
[ʊʁb̥ɐniˈʂiə]	[ʊʁb̥əniˈseˀʌ]	[ʊbəniˈʂiʁə]	[ubɐniˈseɐ̯ə]
[ˈboɖˌfʌlə]	[ˈb̥oˀɐ̯ɖˌfʌlə]	[ˈboɖˌfʌlə]	[ˈb̥oɖˌfʌlə]
[ˈjʌnuˌä]	[ˈjʌnuˌä]	[ˈjʌnuˌä]	[ˈjʌnuˌä]
[ˈjønə]	[ˈjɶnə]	[ˈjɶnə]	[ˈjɶɐ̯nə]

Appendix 22. Transcriptions of the diphthong and word stress targets in the D-group

D 1	D 2	D 3	D 4
[ˈbilisɖ]	[ˈbiliʂt]	[b̥iˈlisɖ]	[ˈb̥iliʂt]
[ɛvɛntyˈɛt]	[əvənˈtyəɖ]	[ˈɛːvənˌɖ͡syəɖ]	[əvənˈɖ͡syʁʌt]
[ˈɡ̊ʰvinəli]	[ˈkvɐ̯nəli]	[ˈɡ̊ʰvɐ̯nli]	[ˈɡ̊ʰvinᵈəli]
[ˈuˌhʲelɖ]	[ˈuelʲ]	[uˈhelt]	[ˈʏhɐlʲ]
[ɡ̊ʰaˈjäɡ̊]	[kɐˈjäɡ̊]	[kaˈjak]	[ɡ̊ʰəˈjək]
[misˈʈedŋke]	[miʂˈɖeŋɡ̊ə]	[ˈmiʂɖ͡säŋɡ̊ə]	[ˈmiʂɖ͡səŋɡ̊ə]
[ˈsɔːˌb̥ä]	[ˈʂɔːˌb̥ä]	[ˈʂɔːˌbɐ]	[ˈʂɔːˌb̥ä]
[misˈʈeŋˌsom]	[misˈɖeŋˌʂʌm]	[ˈmiʂɖ͡seŋsəm]	[misˈɖ͡seŋˌʂʌm]

[ˈbeˌbeag] not valid	[bəˈäbäjɖə]	[ˈbeäbˌäjɖə]	[ˈbɪˌäbˌäjɖə]
[geˈbyˑ]	[gɪˈby]	[ɡ̊eˈbyɣ]	[gɪˈbˌyɣ]
[uˈɡ̊ʰenɳ]	[ˈuˌken]	[uˈɡ̊ʰeɲt]	[ˈukənt]
[ˈskjuɖə]	[ˈsɡ̊julɖə]	[ˈsɡ̊julɖ]	[ˈsɡ̊julɖə]
[ɡ̊ɻäˈfiɡ̊]	[ɡ̊ɻəˈfiɡ̊]	[ɡ̊ɻäˈfiɡ̊]	[ɡ̊ɻäˈfiɡ̊]
[ˈsɒwnˌløs]	[ˈʂʲœwnˌløʂ]	[ˈʂowɲˌlʏʂ]	[ˈʂʲʏʏnˌlʏʂ]
[vioˈliʔn]	[vioˈliʔn]	[vioˈlʲiɲ]	[vioˈlin]
[ɡ̊ʰɻeʈiˈzɛɣ]	[ɡ̊ʰɻiɖiˈsiə]	[ɡ̊ʰɻitiˈʂɪɐ]	[ɡ̊ʰɻiɖiˈzɐʌ]
[ˈjysɡ̊]	[ˈjysɡ̊]	[ˈjysɡ̊]	[ˈjysɡ̊]
[uˈhelɖi]	[uˈɛlɖi]	[ˌuˈhʲelɖi]	[ʏˈheldi]
[ˈbilisɖ]	[biˈlisɖ]	[ˈbilist]	[biˈlisɖ]
[øɡ̊oˈnomisɡ̊]	[øɡ̊əˈnomisɡ̊]	[økoˈnomisɡ̊]	[ɛɡ̊əˈnəmisɡ̊]
[ˈbäɲˌɖom]	[ˈbiäːnɖəm]	[ˈbːäːnˌɖˌʌm]	[ˈbäːnɖəm]
[ˈjuləˈfesɖ]	[ˈjuləˌfesɖ]	[ˈjuleˈfesɖ]	[ˈjuːləˌfesɖ]
[tywəˈɹi]	[tywəˈɻi]	[ɖ͡sywʌˈɻiʔ]	[ɖ͡sʲyʷəˈɻi]
[uˈmuˑli]	[ˈumʊli]	[uˈmulit]	[ʏˈmʏːliɖ]
[ˌbɛˈefɖˌʌ] stress!	[ˈbɛjˌefɖˌʌ]	[ˈbɛjˈefɖˌʌ]	[ˌbɛʲˈefɖˌʌ]
[ˌjɐwnˈalɖɻənə]	[ˌjewnˈaˌlɖɻənə]	[ˈjawnˌaˌlɖɻənə]	[ˈjeᵊnˌalɖɻənə]
[ˌfemɔˌtɻe ˈɖiə]	[ˌfemʌˈɖ͡sɻaðˠˌɪvə]	[ˌfemʌˈtɻaðˠˌvə]	[ˌfemʌˈɖ͡sɻaðˠˌvə]
[ˌuɲəhɪnsˈfɻiˌhiˈ]	[ˈyɖɻɪŋsˌfɻiəd]	[ˈyɖɻyŋsˌfɻihəðˠ]	[ˈu̘d̘iŋsˌfɣihəðˠ]
[ɖɪˈreɡ̊ ɖə]	[ɖɪˈɻɛɡ̊ɖə]	[ɖajˈʁaɡ̊tə]	[ɖiˈɻaɡ̊ɖə]
[ˈaˌlɻɛðˠˌə]	[əlˈɻɛðˠˌə]	[aˌlˈɻeə]	[ˈaˌlɻəðˠˌə]
[ˈbœ̟ nəˌvɔwn]	[ˈbäːnəˌvɔn]	[ˈbːäːnəˌvoʷn]	[ˈbäːnəˌvˌɔwn]
[ˈanəˌspos|peɖɐˈgogik]	[ˌanəðˠˌʂbɻosˌbʰeɖɐgoˈgik]	[ˈanʂsbɻɒspeɖɐgoˈgik]	[ˌanəðˠˌʂbɻobʰeɖɐgoˈgik]
[ˈlɔwgiwnɪŋ]	[ˈlɔwˌɡ̊iwnɪŋ]	[ˈlɔwˌgiˠnɪŋ]	[ˈlɔwˌɡ̊iwnɪŋ]
[ˈiwnəˌsvɐj]	[ˈɛwnəˌsvɐ]	[ˈɛˠnˌʂvɛj]	[ˈewnəˌsvɛʲ]
[ˈbʰibə]	[ˈbʰɐ̟wə]	[ˈbʰɐ̟wʌ]	[ˈbʰɐ̟ːbˌʌ]
[äɏɖoˈmatisk]	[ɔtəmɐˈtisɡ̊]	[äutoˈmaɖ͡siʂk]	[ɣutɔˈmʌːtisɡ̊]
[ˈɖɻiwhus]	[ˈɖɻiwhus]	[ˈɖɻiwhus]	[ˈɖˠiˌuhus]
[ˈœə]	[ˈœwɻʌ]	[ˈɶwɻə]	[ˈøːwɻə]
[ˈflœeɖ]	[ˈfløʲə]	[ˈflɔ̟əɖ]	[ˈflɤ̈ʲət]
[ˈɖajli]	[ˈdäjli]	[ˈɖäjli]	[ˈɖäjli]
[ˈhujə]	[ˈhuə]	[ˈhuə]	[ˈhuə]
[ˈkiɡ̊əli]	[ˈkiəkəli]	[ˈɡ̊ʰiɡ̊ʰəli]	[ˈkɨəkəli]
[ˈpɛɣ]	[ˈpɛɣ]	[ˈpɛɣ]	[ˈbʰɛɣ]
[ˈfɛskən]	[ˈfɛɻsɡ̊ən]	[ˈfɛɣʂkən]	[ˈfɛɻsɡ̊ən]
[ˈɖyɡ̊ə]	[ˈɖyːɡ̊ə]	[ˈɖyɡ̊ə]	[ˈdyᵍkə]

[ˈg̊ʰø̟səl]	[ˈkœːsəl]	[ˈg̊ʰø̟s̪əl]	[ˈkø̟ːsəl]
[ˈœ̟əl]	[ˈœəd̪]	[ˈœ̟ʁ̞əð̞ˠ]	[ˈœˑʁ̞əð̞ˠ]
[ubɐnɪˈzeʌ̟]	[ʊbɐniˈs̬iə]	[ubɐn̪iˈzeɐ]	[ʉbɐniˈs̬eʌ̟]
[ˈb̥o̥d̥fa̟l]	[ˈb̥od̥fələ]	[ˈb̥od̥fa̟lə]	[ˈb̥od̥ˌfa̟lə]
[jɐnuˈä]	[ja̟nuˈä]	[ˈja̟nuä]	[jɐnuˈä]
[ˈjœ̟n]	[ˈjœ̟ːnə]	[ˈhjœ̟n̪ə]	[ˈʰjɵːnə]

D 5	D 6	D 10	D 11	D 12
[ˈbilis̪t]	[ˈbilʲis̪t̪]	[ˈbilʲig̊s̪t̪]	[ˈb̥ilisd̥]	[ˈbilʲis̪t̪]
[ɪvənˈd̥͡syʁ̞əð̞ˠ]	[ɛvʲenˈtyʁ̞ət]	[ɛvenˈtyʁ̞ət]	[evənˈd̥͡syʁ̞əð̞ˠ]	[ɛvʲenˈtyʁ̞ət]
[ˈg̊ʰvinəli]	[ˈkvin̪li]	[ˈkwin̪əli]	[ˈkvinəli]	[ˈkvin̪li]
[ˈuˌhelʲ]	[ˌuˈhɛlʲ]	[ˈuˌhəl]	[ˈuˌhelt]	[ˌuˈhɛlʲ]
[g̊ʰa̟ˈjäg̊]	[kɐˈjak]	[kɐˈjak]	[kaˈjäg̊]	[kɐˈjak]
[mis̪ˈd̥͡seŋg̊ə]	[mis̪ˈt̪ɛŋkə]	[mis̪ˈt̪aŋkə]	[ˈmisd̥͡säŋg̊ə]	[mis̪ˈt̪ɛŋkə]
[ˈs̪ɔ̝ˌb̥ä]	[ˈs̪ɔ̝ˌbä]	[ˈs̪ɔ̝ˌbä]	[ˈsɔ̝ːˌb̥ä]	[ˈs̪ɔ̝ˌbä]
[misˈd̥͡seŋˌs̪ʌ̟m]	[mis̪ˈt̪ɛŋkˌs̪ʌ̟m]	[ˈmis̪t̪əŋks̪ʌ̟m]	[ˈmisˌd̥͡sæ̃ŋsʌ̟m]	[mis̪ˈt̪ɛŋkˌs̪ʌ̟m]
[bɪˈäbäjdə]	[ˌbeɐˈbäjd̪ə]	[ˈbeɐʁ̞ˌbäjd̪ə]	[ˈb̥eäb̥äjd̥ə]	[ˌbeɐˈbäjd̪ə]
[gɪˈbyɐ̯]	[geˈby]	[gɪˈby]	[g̊eˈb̥yɐ̯]	[geˈby]
[ˌuˈg̊ʰent]	[ˌuˈkent]	[ˈuˌkent̪]	[ˈuˌg̊ʰent]	[ˌuˈkent]
[ˈsg̊juld̥ə]	[ˈs̪kjuld̥ə]	[ˈs̪g̊juld̥ə]	[ˈsg̊jultə]	[ˈs̪kjuld̥ə]
[g̊ʁ̞äˈfig̊]	[ˈg̊ʁ̞äfik]	[g̊ʁ̞äˈfik]	[ˈg̊ʁ̞äfig̊]	[ˈg̊ʁ̞äfik]
[ˈs̪ʲœ̟wnˌlø̟s̪]	[ˈs̪ʲœ̟ᶙnˌlø̟s̪]	[ˈs̪ʲœ̟u̯nˌlø̟s̪]	[ˈsœ̟wnˌlø̟s]	[ˈs̪ʲœ̟ᶙnˌlø̟s̪]
[vioˈliˀn]	[vioˈlin]	[vioˈlin]	[vioˈlin]	[vioˈlin]
[g̊ʰʁ̞id̥iˈse̟ˀʌ̟]	[g̊ʰʁ̞e̟d̥iˈs̪ɛʌ̟]	[kʁ̞it̪iˈziʁ̞ə]	[g̊ʰʁ̞id̥iˈs̬eʌ̟]	[g̊ʰʁ̞e̟d̥iˈs̪ɛʌ̟]
[ˈjysg̊]	[ˈjys̪g̊]	[ˈjʉ̞s̪g̊]	[ˈjysg̊]	[ˈjys̪g̊]
[ˈuheld̥i]	[uˈheldi]	[ˈʉ̞ˌheld̥i]	[ˈuheldi]	[uˈheldi]
[biˈlisd̥]	[biˈlis̪d̥]	[ˈb̥ilis̪d̥]	[ˈb̥ilisd̥]	[biˈlis̪d̥]
[ø̟g̊o̞ˈno̞ˀmisg̊]	[ø̟koˈn̪omis̪k]	[əkəˈn̪omis̪k]	[ɘg̊oˈnomisg̊]	[ø̟koˈn̪omis̪k]
[ˈbäːnd̪ʌ̟m]	[ˈbäːnd̪ʌ̟m]	[ˈbäːnd̪ʌ̟m]	[ˈb̥äːnˌdʌ̟m]	[ˈbäːnd̪ʌ̟m]
[ˈjuːləˌfesd̥]	[ˈjuləˌfes̪t̪]	[ˈjuləˌfes̪t̪]	[ˈjuləˈfesd̥]	[ˈjuləˌfes̪t̪]
[d̥͡sywʌ̟ˈʁ̞iˀ]	[t̪ʲyveˈʁ̞i]	[t̪ʲyveˈʁ̞i]	[d̥͡sywʌ̟ˈʁ̞i]	[t̪ʲyveˈʁ̞i]
[uˈmuːlid̥]	[ʊˈmuːlʲit̪]	[ˈʉ̞mʉ̞lʲit̪]	[ˈuˌmulit]	[ʊˈmuːlʲit̪]
[ˈb̥ɛjˌefd̥ʌ̟]	[ˌb̥ɛˈɛft̪ʌ̟]	[ˌb̥ɛjˈeft̪ʌ̟]	[ˈb̥ɛjˈeftʌ̟]	[ˌb̥ɛˈɛft̪ʌ̟]
[ˈjewnˌa̟ld̥ʁ̞ənə]	[ˌjawnˈa̟ld̥ənə]	[ˈjæwnˌald̥ʁ̞ənə]	[ˈjæwnˌa̟ldʁ̞ənə]	[ˌjawnˈa̟ld̥ənə]
[ˌfemʌ̟ˈd̥͡sʁ̞að̞ˠvə]	[ˌfemʌ̟ˈt̪ɹalvə]	[ˌfemɔˈt̪ʁ̞að̞və]	[ˌfemʌ̟ˈd̥͡sʁ̞ɛljə]	[ˌfemʌ̟ˈt̪ɹalvə]
[ˈyd̥ʁ̞e̟ŋsˌfʁ̞ihəð̞ˠ]	[y̽t̪ˈʁ̞y̽sfʁ̞iˌhil]	[ˈʉ̞t̪ʁ̞ɪŋsfwiˌhəð̞]	[yyyˈd̥ʁ̞iŋsˌfʁ̞iˌhɛð̞ˠ]	[y̽t̪ˈʁ̞y̽sfʁ̞iˌhil]
[d̥iˈʁ̞ag̊d̥ə]	[d̪irˈɛkt̪ə]	[d̪iˈɣɛg̊d̥ə]	[ˌd̥iˈʁ̞ag̊d̥ə]	[d̪irˈɛkt̪ə]
[ˈa̟ləʁ̞əð̞ˠə]	[a̟lˈʁ̞ɛð̞ə]	[a̟lˈʁ̞ɛð̞ə]	[ˈalˈʁ̞eð̞ˠə]	[a̟lˈʁ̞ɛð̞ə]
[ˈbäːnəˌvɔ̝wn]	[ˈb̥äːnəˌvou̯n]	[ˈb̥äːnəˌvou̯n]	[ˈb̥änvɔ̝wn]	[ˈb̥äːnəˌvou̯n]

[ˌa̟nəð̠ˠ̟ˌs̪b̥ʁ̞os̪b̥ʰed̪ɐg oˈgik]	[ˌa̟n̪əð̠ˠ̟ˌs̪b̥ʁ̞os̪ped̪ɐg oˈgik]	[ˈa̟n̪d̥əð̠ˠ̟ˌs̪b̥ʁ̞oped̪ɐˌg ogik]	[ˌandəd̥sˌb̥ʁ̞oᵘs̪b̥ʰed̥aˈ gogik]	[ˌa̟n̪əð̠ˠ̟ˌs̪b̥ʁ̞os̪ped̪ɐg oˈgik]
[ˈlo̞wˌg̊iwnɪŋ]	[ˈlowˌgiwnɪŋ]	[ˈlownˌgiwnɪŋ]	[ˈlo̞wˌgiwⁿiŋ]	[ˈlowˌgiwnɪŋ]
[ˈewnəˌsvɛ]	[ˈɛvnəˌs̪vɛʲə]	[ˈɛvnəˌs̪vɛ]	[ˈewnəˌsvɛj]	[ˈɛvnəˌs̪vɛʲə]
[ˈb̥ʰe̞b̥ʌ̟]	[ˈpɛb̥ə]	[ˈpɛb̥ə]	[ˈb̥ʰe̞wʌ̟]	[ˈpɛb̥ə]
[äud̥͡soˈmɛd̥͡sisg̊]	[äut̪oˈmat̪is̪k]	[äut̪oˈmat̪is̪k]	[äud̥͡soˈmɛd̥͡sisg̊]	[äut̪oˈmat̪is̪k]
[ˈd̥ʁ̞iwhus]	[ˈd̥ʁ̞ɛwhus̪]	[ˈd̥ɣiwhus̪]	[ˈd̥͡sʁ̞iwˌhus]	[ˈd̥ʁ̞ɛwhus̪]
[ˈø̞wʁ̞ʌ̟]	[ˈø̞wrə]	[ˈœvə]	[ˈø̞wʁ̞ʌ̟]	[ˈø̞wrə]
[ˈflʌ̟ʲəð̠ˠ̟]	[ˈflɵʲt̪ə]	[ˈflɵʲt̪]	[ˈflʌ̟jət]	[ˈflɵʲt̪ə]
[ˈdäjli]	[ˈd̥äjli]	[ˈd̥äjli]	[ˈd̥äjli]	[ˈd̥äjli]
[ˈhujə]	[ˈhujə]	[ˈhʉ̜jə]	[ˈhuj]	[ˈhujə]
[ˈg̊ʰiɐ̯g̊əli]	[ˈkiəkəli]	[ˈkiəkəli]	[ˈkiəkəli]	[ˈkiəkəli]
[ˈb̥ʰeɐ̯]	[ˈpɛɐ̯]	[ˈpeɐ̯]	[ˈb̥ʰɛɐ̯]	[ˈpɛɐ̯]
[ˈfɛɐ̯sg̊ən]	[ˈfɛɐ̯s̪kən]	[ˈfɛɐ̯s̪kən]	[ˈfɛɐ̯sg̊ən]	[ˈfɛɐ̯s̪kən]
[ˈdyᵄ̯kə]	[ˈdyᵄ̯kə]	[ˈdykə]	[ˈd̥yɐ̯g̊ə]	[ˈdyᵄ̯kə]
[ˈkø̞ːsəl]	[ˈkø̞ːs̪əl]	[ˈkø̞ɐ̯s̪əl]	[ˈg̊ʰø̞ɐ̯səl]	[ˈkø̞ːs̪əl]
[ˈœɐ̯əð̠ˠ̟]	[ˈœəl]	[ˈœɣəð̠ˠ̟]	[ˈɶ̟ʁ̞əð̠ˠ̟]	[ˈœəl]
[ʊbɐniˈs̪ʲiˀʌ̟]	[ʊbɐniˈzeʌ̟]	[ʊbɐniˈzeʌ̟]	[uɐ̯b̥aniˈseʌ̟]	[ʊbɐniˈzeʌ̟]
[ˈb̥od̥ˌfa̟lə]	[ˌb̥ot̪ˈfa̟lə]	[ˌb̥ot̪ˈfa̟lə]	[ˈb̥otˌfa̟lə]	[ˌb̥ot̪ˈfa̟lə]
[ˈja̟nuˌä]	[januˈä]	[januˈä]	[ˈjanuˌä]	[januˈä]
[ˈjɶ̟ːnə]	[ˈhjɶ̟ːnə]	[ˈjɶ̟ːnə]	[ˈjɶ̟nə]	[ˈhjɶ̟ːnə]

Appendix 23. T-test on the statistical significance of the difference in mean scores of the D- and R-groups.

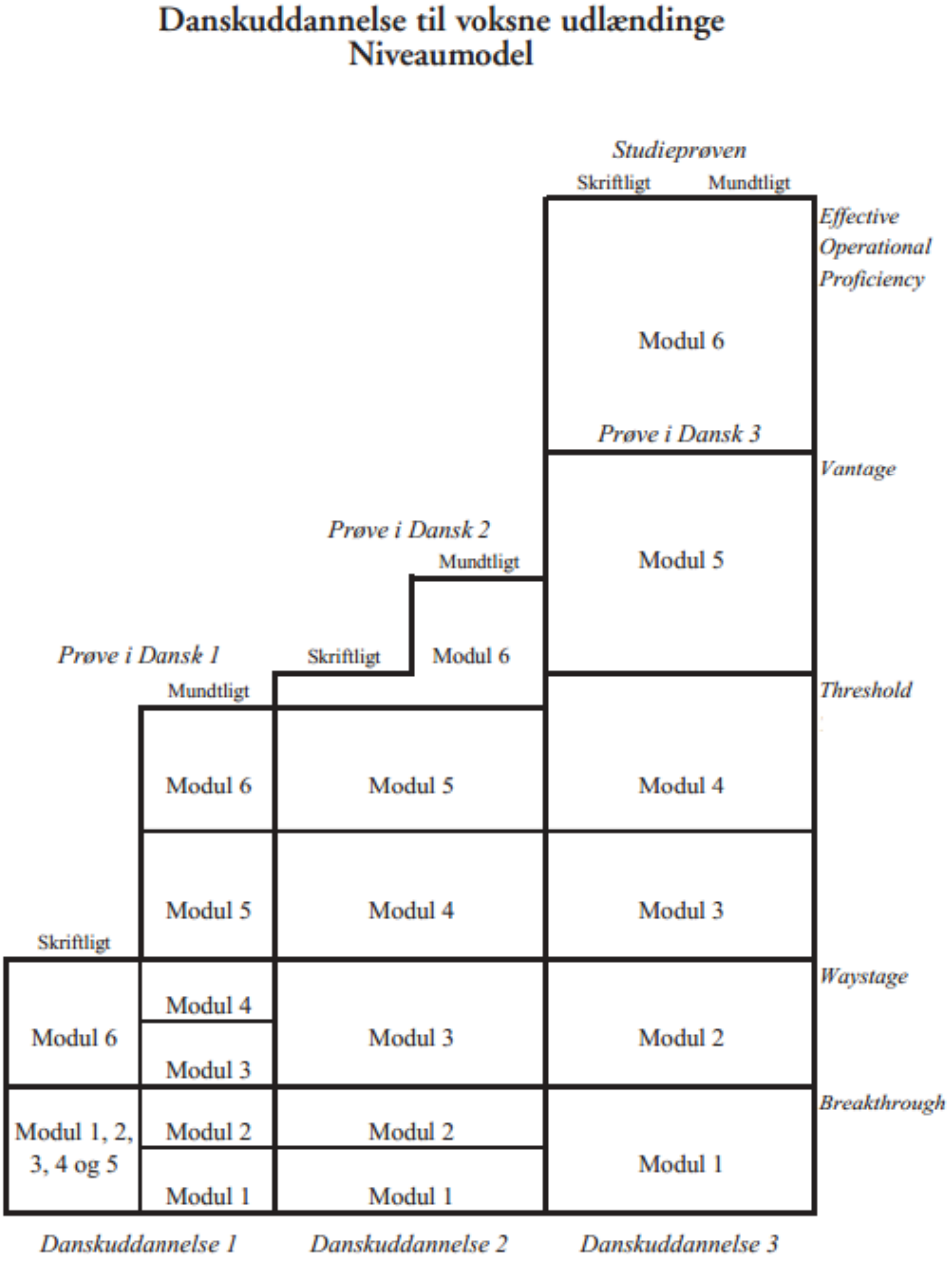
2/14/12 Student's t-test: Results

The results of an unpaired t-test performed at 11:34 on 14-FEB-2012
t= 2.04
sdev= 0.463
degrees of freedom = 25
Null hypothesis: SIPT does not play a foreign accent-mitigating role.
The probability of this result, assuming the null hypothesis, is 0.053

Group A: Number of items= 15
1.38 1.50 1.62 1.75 2.00 2.12 2.25 2.25 2.38 2.38 2.50 2.50 2.50 2.62 2.75
Mean = 2.17
95% confidence interval for Mean: 1.921 thru 2.413
Standard Deviation = 0.427
Hi = 2.75 Low = 1.38
Median = 2.25
Average Absolute Deviation from Median = 0.333

Group B: Number of items= 12
1.25 1.38 1.38 1.50 1.50 1.50 1.62 2.00 2.00 2.12 2.50 2.88
Mean = 1.80
95% confidence interval for Mean: 1.527 thru 2.077
Standard Deviation = 0.504
Hi = 2.88 Low = 1.25
Median = 1.56
Average Absolute Deviation from Median = 0.385

Appendix 24. Levels of the Danish language programme for adult foreigners according to the Common European Language Framework



Appenix 25. Recordings