Filozofická fakulta
Univerzita Karlova

Bakalářská práce

Jana Rumlová

Fonetické aspekty silného českého přízvuku v angličtině

Phonetic features of strong Czech accent in English

Praha, 2018

doc. Mgr. Radek Skarnitzl, Ph.D.

Acknowledgements

I would like to thank Doc. Mgr. Radek Skarnitzl, Ph.D. for his kind advice, supervision and help with my studies and subsequent help with writing my thesis. His brilliant teaching skills led me to phonetics and its further study. I hope that my current and future work will be a contribution not only to this field but also to Mr. Skarnitzl and his team.

Prohlášení

Prohlašuji, že jsem bakalářskou práci vypracoval/a samostatně, že jsem řádně citoval/a všechny použité prameny a literaturu a že práce nebyla využita v rámci jiného vysokoškolského studia či k získání jiného nebo stejného titulu.

V Praze dne …… Podpis ……

Abstrakt a klíčová slova

Cílem této práce je prozkoumat problematické fonetické aspekty českého přízvuku v angličtině a zjistit v jakém poměru přispívají k tvorbě silného cizineckého přízvuku. V teoretické části je nejprve představen koncept cizineckého přízvuku a důvody pro jeho existenci. Následně jsou prezentovány jednotlivé segmentální a suprasegmentální aspekty jazyka, v nichž se jazyky mohou odlišovat a které tak mohou působit potíže při osvojování výslovnosti cizího jazyka, včetně nejvlivnějších modelů jejich osvojování. Zmíněny jsou i sociální dopady cizineckého přízvuku. Teoretická část také stručně porovnává zvukový plán angličtiny a češtiny na úrovni segmentální i prozodické a následně čtenáře seznamuje s dosavadním výzkumem angličtiny ve výslovnosti českých mluvčích. V empirické části bakalářské práce je představeno metodologické pozadí provedeného výzkumu, analyzované rysy české angličtiny a výsledky studie. Výzkum deseti mluvčích české angličtiny ukázal, které aspekty dělají mluvčím největší problém a které jsou pouze individuální. Z výsledků vyplývá, že za nejproblematičtější se dá považovat výslovnost samohlásek /æ/, /ɒ/, /ə/ a souhlásek /ð/, /θ/ a /ŋ/, které bývá zpravidla doprovázeno explozivou /k/, a aspirace Z prozodické úrovně pak byly nejvíc znatelné problémy se spojováním slov, resp. glotalizací, a umisťováním přízvuku na první slabiku. Tyto jevy se by se tedy daly považovat za problematické pro české mluvčí angličtiny a měl by na ně být kladen důraz při výuce angličtiny jako cizího jazyka.

Klíčová slova: cizinecký přízvuk, angličtina, čeština, výslovnost, jazykový transfer

Abstract and Key words

The main aim of this thesis is to analyse problematic phonetic features of Czech accent in English and to discover how they contribute to strong foreign accent. The theoretical part presents the concept of foreign accent and why it occurs. Individual segmental and supra-segmental features of language that are different in each language and can, therefore, cause problems while acquiring a foreign language are presented afterwards, along with the most influencing models of their acquisition. Social consequences of a non-native accent are also mentioned. The theoretical part also briefly compares the segmental and supra-segmental levels of Czech and English and then introduces research that has been performed so far on the topic of the Czech pronunciation of English. The empirical section presents the methodology of the research, the analysed features of the Czech English and the results of the study. The analysis of the ten speakers has shown which aspects are causing the biggest problems and which ones are individual. According to the results, the most problematic features are vowels /æ/, /ɒ/, /ə/ and consonants /ð/, /θ/ and /ŋ/ that tends to co-occur with the plosive /k/, and aspiration. On the prosodic level, linking, or glottalization, seems to cause the most significant problems, along with the stress-placement due to the Czech tendency to put it on the first syllable. These phenomena can be, therefore, summarized as problematic to the Czech speakers of English and should be focused on while teaching English as a foreign language.

Key words: foreign accent, English, Czech, pronunciation, language transfer

Table of contents

1. Introduction

Learning a foreign language means acquiring all its parts: vocabulary, grammar, syntax and last, but not least, phonology. The speaker's pronunciation is generally the first sign that can reveal whether we are communicating with a native or non-native speaker as it is rather easy to avoid intricacies to be found in all the other layers of language. Phonological difficulties, however, can be avoided as well if there is no reason for the speaker to present them. It is clear that in a short statement such as "I do" or the question "Why?" the typical English consonants /r/, /θ/, /ð/ are not included, neither is aspiration or any other feature typical of the English language and therefore it is easier for a non-native speaker to hide their foreign accent. According to Roy C. Major, there are three major features that need to be dealt with in order to handle the phonology of a foreign language: a) individual segments, b) combination of segments (which together create syllables) and c) prosody (meaning stress, rhythm, tone and intonation). If any of these three parts is not handled native-like, a global foreign accent is created. (Major, 2001, p. 12).

The main aim of this thesis is to closely examine, with help of the research already performed on the topic of the Czech accent in English, individual parts of speech that can be considered particularly problematic, (e.g. /ə/, /æ/, aspiration, linking) and afterwards create an overall picture of how each of these segments contribute to the Czech accent in English. Section 2.1. contains general information about foreign accent in English, the influence of age on the ability of leaning a second language and the contribution of psychological aspects. Section 2.2. includes the description and comparison of the segmental and suprasegmental levels of language, as well as information about the English prosody. Section 2.3. then introduces the problem of the socio-psychological aspects of non-native accent, in particular its consequences on human behaviour, prejudice and stereotypes. Information about the Czech English will be introduced in section 3, part 3.1. containing the description of the individual segments and the differences between the Czech and the English ones, section 3.2. introducing a comparison of Czech and English prosody. The methodological part in section 4. the reasons for choosing the particular segmental and supra-segmental features to be studied and a description of the process of choosing individual words. Section 5. then presents results and discussion of individual phenomena with section 5.11 dedicated to a summary of the results of individual speakers. Summary of the results is presented in General Discussion in section 6, conclusion follows in section 7. References are given in section 8.

2. Foreign accent

2.1. What is foreign accent and why it occurs

Although there are many ways in which the foreign accent has been defined, as the view of the accent itself keeps changing with the research, it is usually described as a deviation from a standard. According to Hansen Edwards and Zampini, the accented speech means that "for almost all late second language (L2) learners, the phonetic realization of phonological structures in the L2 is markedly different from native-language patterns" (Hansen Edwards & Zampini, 2008, p. 153). Volín and Skarnitzl define foreign accent as "a set of pronunciation patterns, at both segmental and suprasegmental levels, which differ from pronunciation patterns found in the speech of native speakers" (Volín & Skarnitzl, 2010, p. 1010). Both the segmental and suprasegmental levels contribute to a speaker sounding foreign. While segmental features include vowels and consonants, the suprasegmental ones, as the prefix supra- implies, refer to features that exist above the individual segments. As a suprasegmental level we class for example stress; that means the prominence we give to a syllable or, in monosyllabic words, the whole word. The systems of stress differ from language to language, some of the systems being fixed, others being free. Here we can see one of the first fundamental differences as the Czech stress system is fixed with the stress always on the first syllable, while the English one represents a free stress system. Rhythm, another part of the suprasegmental level, is closely interconnected with the stress pattern and shows other of the differences between the two languages discussed. There are several groups of languages based on the speech rhythm: while the Czech syllables occur regularly and it is rather irrelevant which of those are stressed or unstressed, representing so called syllable-based rhythm ("staccato rhythm"), what matters in the English speech rhythm are the stressed syllables as they tend to occur in regular sequences, therefore creating stress-based rhythm ("heart-beat rhythm"). If the speech is to sound natural, we need to combine all the features such as rhythm and stress and also control the pauses between words as well as, for instance, the prolongation of final syllables which altogether create its temporal structure. Apart from the temporal aspects of language, the natural flow of speech is also created by the melodic behaviour, or intonation, whose functions are manifold: lexical (which is only relevant in some languages in Africa or SE Asia), indexical (indexing some part of our identity), affective (mostly connected with emotions), grammatical (prosodic phrasing, sentence types), accentual (referring to the placement of stress in a sentence) and discourse (conversation

structure). With all these functions combined, languages behave differently in using intonation, the difference between Czech and English is going to discussed in section 3.2. The segmental and suprasegmental levels do not function separately or independently. They are interconnected and one influences the other, therefore, both levels must be handled well in order to avoid a non-native accent. Major presents a theory that there are three levels to manage: individual segments, combination of segments, prosody (Major, 2001). He, as well as Gass with Mackey, put emphasis on the fact that handling one of these only is not sufficient for sounding like a native speaker: "If one masters nativelike pronunciation of one or two but not all three levels, then a foreign, or non-native, accent results" (Major, 2001, 12). This is, however, only true if speaking about longer speech segments, as it is easier to avoid certain parts of speech in shorter utterances. If, for instance, a speaker learns precisely how to pronounce the typically English dental fricative /θ/, velar nasal /ŋ/ and open front vowel /æ/, all being only on the segmental level, it is perfectly possible for a listener to miss their accent while pronouncing the word "thanks" (/θæŋks/). When the situation requires a somewhat more complex utterance such as "Thank you, that is very nice of you," not only must the speaker prove their knowledge of other segmental features such as the English post-alveolar approximant /r/ or another dental fricative /ð/, but they also cannot avoid suprasegmental features such as linking or melodic and temporal patterning. Even though some of the studies already performed were actually based on single syllables or just few-word utterances, if we want to get a relevant picture we should generally base the research on a longer stretch of speech of at least several sentences.

Having established what the foreign accent actually is, we should now focus on the reasons for its existence. Probably the most frequently considered factor that could have any effect is the age of the learner. Much research has been performed and did prove that speakers who began their learning of English at an early age are far more likely to be perceived to sound native-like than those who start during their adulthood. One of the theories that deals with this topic is called the Critical Period Hypothesis (CPH). The primary claim is that there is only a certain window in aging while we can acquire language easily and after this period elapses, the acquisition is far more effortful, if not impossible at all. Gass and Mackey explain that "The concept of "critical period" implies a declining learning capacity within a specific age range and a maturational, ultimately biological reason for this decline" (Gass, Mackey, 2012, p. 443). Montreal neurologist, Wilder Penfield, first proposed this theory in 1959 and later was further discussed by Eric Lenneberg in his work Biological Foundations of Language (1967). It has been, however, discussed by many researchers as some of them

claim, for instance, that the term "critical" is too radical as people are able to acquire a new language even after this period, although with difficulties. According to them, it should therefore rather be called e.g. "sensitive" period. The first mentions of the CPH applied to L1 acquisition, claiming that the human ability to acquire languages depends on neuroplasticity. It is believed that the human incapability to acquire a language to a full extent after reaching a certain age is connected to the gradual loss of the brain plasticity. It was believed that "the end of a critical period for speech is usually associated with some sort of neurological change (e. g., lost plasticity, hemispheric specialization, or neurofunctional reorganization) that is thought to arise as the result of normal maturation" (Flege, 1999, p. 102). As the brain ages, it is harder and harder to acquire a language but, importantly enough, harder does not mean impossible; only with restraints and possibly not mastering the language entirely. The question of a particular age is one of the questions that Lenneberg deals with in his work: "Analogous to the question of how old must a child be before he can make use of the environment for language acquisition is the question of how young must an individual be before it is too late to acquire speech and language" (Lenneberg, 1967, 142). However, as already mentioned earlier, this hypothesis was originally applied to the first language acquisition, its applicability to the second language acquisition (SLA) has been proposed only later.

Opinions on the particular age boundaries vary, according to Hansen Edwards and Zampini, "early onset is usually defined as L2 learning before the age of 8, while late onset addresses learners over age 16" (Hansen Edwards & Zampini, 2008, 45). Michael Long considers his previous research a proof that children should start learning before reaching the age of 6 in order to speak without any foreign accent, if starting between 6 and 12, their accent will be most probably at least partially recognized, and starting their learning after the age of 12 will leave the L2 with a clear foreign accent (Long, 1990, cited in Flege, 1990, p. 101). Even though scientists have, in general, agreed that there is, with no doubt, a connection between the age of the learner and his ability to acquire L2 with no recognizable foreign accent, the biological reasons for that are doubtful. One of the arguments against this claim is for instance the fact that in spite of the vast majority of adult learners having a detectable accent, there is still a certain percentage of speakers who do not manifest any foreign accent despite a later onset of the SLA due to, for instance, their motivation. If the reason for this had been anatomical there could have been no exceptions at all as the anatomy of the brain processes apply to all humans. Flege points out that there are also other hypotheses, besides CPH, that have been proposed over the years, among those for example the "exercise

hypothesis," according to which our ability to produce as well as perceive speech is not affected at all during the entire life if only we continue learning permanently with no interruption. Other hypotheses talk about the influence of L1 on the production of L2. Hansen Edwards and Zampini point out that "the alternative explanations for phonological age effects rely on perceptual and/or production difficulties caused by interference from the L1 phonology" (Hansen Edwards, Zampini, 2008, p. 49). This works as a direct proportion: the longer a speaker uses his first, native language, and the more he understands its grammar as well as vocabulary and phonology, the more they tend to unconsciously apply the rules on any other language they learn. That, therefore, lends support to the theory that the sooner a speaker starts acquiring a second language, the more probable it is that it will not be affected by their native language. This idea can be seen in so called "unfolding hypothesis," which claims that foreign accents in L2 are not caused by any loss of our learning abilities, but, quite to the contrary, are present due to the phonetic development of L1. Flege literally says that "the unfolding hypothesis predicts that the more fully developed the L1 phonetic system is at the time L2 learning begins, the more foreign-accented the pronunciation of the L2 will be" (Flege, 1999, p. 105). Uriel Weinreich took this idea of the L1's influence even further and came with an "interaction hypothesis," according to which not only is there an influence of L1 on L2, but also vice versa. Weinreich claims that the influence is mutual and that bilinguals are not fully able to separate both their languages and therefore they necessarily influence each other (Weinreich, 1953, cited in Flege, 1999, p. 105f.). Flege's conclusion of his research sums up basically all the hypotheses dealing with the influence of the languages: "L2 pronunciation accuracy may decline, not because one has lost the ability to learn to pronounce, but because one has learned to pronounce the L1 so well. The results presented suggest that one's inaccuracy in pronouncing an L2 varies as a function of how well one pronounces the L1, and how often one speaks the Ll" (Flege, 1999, p. 125).

Many researchers have found that the features of a foreign accent are not explicable only by concluding that the rules the speaker is accustomed to in his native language are applied to the L2. There is actually a place in between the two languages which has been called an "interlanguage." Gass and Mackey explain it as "the term given to the mental system developed by L2 learners that enables them to produce and understand utterances of the TL [target language]" (Gass, Mackey, 2012, p. 94). In other words, after examining the phonological features of a non-native accent, research has shown that the measured values do not correspond with those of the native language, nor with those of the target one. Hansen Edwards and Zampini explain it as follows: "when producing utterances in an L2, speakers

often produce phonetic segments and sequences that appear to be a product of complex interactions between L1 and L2 phonetic realization rules (inter-language phonology)" (Hansen Edwards, Zampini, 2008, p. 193). According to Gass and Mackey it is also necessary to consider the background of the speaker's learning. The accent is greatly influenced by whether the speaker is taught by a native speaker or a teacher of the same native language, whether they are learning it in a class room or they are so called natural learners, acquiring the language in the country of its origin, surrounded by native speakers.

Besides all the above-mentioned features creating the foreign accent, there are also other factors contributing significantly: the psychological aspects. Motivation can be identified as one of the most significant ones. Even though it might be considered only the reasons the learner has for L2 acquisition and his will to acquire the L2 on the native level, many studies have been performed on this topic. Gardner and Lambert, for instance, present two kinds of motivation in language learning: an "integrative orientation," which includes a personal interest in the culture and people the acquired language represents, and an "instrumental orientation," which reflects predominantly the advantages and practical value learning the particular language (Gardner and Lambert, 1972, cited in Gass & Mackey, 2012, p. 396). A highly motivated individual can achieve the native-like level even if their learning begins later while someone who lacks any determination to sound like a native speaker does not have to reach it at all. This can be also affected by such factors as the musical ear as learners with musical skills are able to perceive and therefore even produce the correct pronunciation more easily. Talent for music, however, is a very individual phenomenon as well as its influence on SLA and it cannot be applied as a rule. Aptitude as such also has to be considered for there are individuals whose natural talent allows them to acquire any language, along with its pronunciation, showing no difficulties at all, while others have to expand extra efforts to learn even the most basic level of L2. Yet again, all these above-mentioned factors are highly individual and do not apply to all members of these "groups" exclusively.

2.2. Segmental and prosodic aspects

So far mostly the dissimilarities between the languages have been discussed. Nevertheless, there are actually also many studies discussing the similarity between the two languages. While the contrastive analysis usually claims that the more different the languages are the more difficult it is to reach the native level, another thought arose that similarities between languages can actually cause even greater difficulties with the L2 acquisition and

result a foreign accent. Major explains that "the psycholinguistic reason why similar sounds tend to be more difficult than dissimilar sounds seems to be that gross differences are more often noticed, due to perceptual saliency, whereas minimal differences are less likely to be noticed resulting in non-learning" (Major, 2001, p. 37). These similarities and dissimilarities are mostly being observed on the segmental level, that is on the level of vowels and consonants. An average learner will not look for any dissimilarities between, for instance, the Czech and English open back rounded vowels /o/ and /ɒ/; the impression of their equivalence is certainly reinforced by spelling. When this slight difference stays unnoticed, the speaker does not consider it a subject of learning and it then contributes to a non-native accent.

The question of how L2 vowels and consonants are acquired by learners, and how this is affected by vowels and consonants of their native language, has been addressed by several researchers; the following summary is based on Hansen Edwards & Zampini, p. 170f. Best in her study (1994) creates a *Perceptual Assimilation Model* (PAM) in which she combines the factors of perception and production. According to her model, a child in an early stage creates categories for the sounds of his/her native language while learning to pronounce them. Afterwards, when acquiring an L2, similar sounds of the foreign language will be assimilated with the categories of the native language and the more similar they are, the more difficult it will be to learn them, on the contrary, if the two sounds are in contrast, the acquisition will be easier. Kuhl's *Native Language Magnet* (NLM) *Model* (1992) is based on an infant's phonetic prototypes which are "idealized representations of phonetic categories and act as anchors that interfere perceptually with the acquisition of nonnative higher-level phonemic categories" (Hansen Edwards & Zampini, 2008, p. 49). When a new sound in an L2 occurs, the prototype functions as a "magnet," due to which the learner perceives the new sound as the learned prototype. Flege (1995) in his *Speech Learning Model* engages in the topic of the decline in ability to learn the phonology of an L2 with aging. According to him, while the ability to produce new sounds does not change, the perception undergoes a change with age. As children's phonetic categories are not fixed as much as the ones of adults, it is more probable that their L2 will not be as influenced by their native language as will be the L2 acquired by an adult.

Apart from the segmental features of languages, which have been mostly discussed so far, there is another aspect of language that plays a significant role in the acquisition and perception of an L2: prosody, which includes such properties such as rhythm, tone, stress, pitch, tempo, loudness or duration. Not all of them necessarily present distinctive features in the sense that their incorrect usage would bring for instance a change in meaning; they do,

however, play an essential role in the creation of a foreign accent. Studies have found that suprasegmental aspects of speech influence intelligibility more than segmental ones (e.g., Anderson-Hsieh, Johnson, & Koehler, 1992; Boula de Mareüil & Vieru-Dimulescu, 2006; Carmichael, 2000; Magen, 1998; as listed in Mennen & de Leeuw, 2014, p. 184); it is therefore recommended today that prosodic aspects should be targeted from the start in foreign language learning. According to Mennen and de Leeuw, "Transfer from the first language (L1) is thought to be particularly persistent in prosody; L1 prosodic influences can remain present even after years of experience with the L2" (Mennen and de Leeuw, 2014, p. 183). The problem of acquisition of a foreign language prosody depends on many variables. Although the students of English will, most probably, not receive any formal instruction about the differences between the individual vowels and consonants in the two languages, they will cover at least some parts of this segmental level, for instance by learning the pronunciation of the consonants /θ/ and /ð/ or about the sound that a native speaker will produce when pronouncing the vowel /æ/. Regular English lessons will, however, only scarcely include any mention of the difference between the Czech syllable-based rhythm and English stress-based rhythm, nor will they study properly such terms as prosodic phrasing that can in many cases influence the meaning of the whole sentence. Apart from that, another significant influence on prosody comes thorough the learner's native language (in a similar way it is to be found on the segmental level). This can be seen, for instance, in the case of the already mentioned rhythm (section 2.1). When a Czech native speaker pronounces e.g. the sentence "Your fear of spiders is very irrational," they will most probably apply the Czech stress pattern and stress the first syllables of the words and the rhythm will therefore be completely irregular: /ˈjoːr ˈfiːr ʔof ˈspaɪdr̩s ʔɪz ˈverɪ ˈɪreʃənl̩/ . An English native speaker, on the other hand, will not only put the stress in the word "irrational" on the second syllable, they will also weaken the pronunciation of the pronoun "your," the preposition "of" and the verb "is", which will make the rhythm sound native: /jə͡ˈfiəʔəv͡ˈspaɪdəz͡ɪzˈverɪ̯ɪˈræʃənl̩/. This reduction and weak pronunciation of grammatical words contributes to the regularity of the rhythm together with other aspects of connected speech as is to be discussed next.

Speech rhythm is also influenced by linking, that is the connectedness of words in a speech flow. Linking does not only mean connecting the first sound of the following word to the last sound of the preceding word. It can be also realized by inserting additional sounds, so called linking and intrusive 'r', transient 'w' and 'j'. While linking 'r' occurs in positions where it is actually present in the written text but not in the pronunciation (non-rhotic accents of English, e.g. British English), particularly at the end of a word followed by a vowel, the

intrusive one appears only in pronunciation when there is no ‘r’ in the text, when a word ends in a vowel (/ə/, /ɑ:/, /ɔ:/) followed by another vowel in the beginning of the following word. For instance, although the regular British pronunciation of the word “future” is /fju:tʃə /, when followed by the word application, the ‘r’ will be pronounced: /ˈfju:tʃəræplɪˈkeɪʃn̩ /; “law and order” is in the British English linked together as follows: /ˈlɔ:rənˈɔ:də/. The transient ‘w’ appears when the first word ends in an ‘u’ sound (/ʊ/, /aʊ/, /əʊ/, /u:/), for instance “you are” will be pronounced as / /ju:ʷɑ:/. Transient ‘j’ then occurs ‘i’ sounds (/i:/, /ɪ/, /ɔɪ/, /aɪ/, /eɪ/): “we are”- /wi: ʲɑ:/. As linking is not such a regular process in Czech, speaker pronunciation training will most probably not insert any additional sounds, quite to the contrary, will glottalize the words beginning in a vowel (see the transcription of the example sentence above), which together with the full pronunciation of the conjunction (as discussed in the previous paragraph) contributes to a non-native rhythm.

Melody is another prosodic aspect of speech that tends to be influenced by the interference of the melodic patterns of the speaker’s L1. Apart from its function of signalling the speaker’s attitude towards the subject or the listener or their social background, it also indicates, for instance, syntactic functions and in some cases can even influence the meaning. The melody of the English language is rather specific as, for instance, the melodic range of English is much greater than in many other languages (e.g. Czech). Besides emotions and attitude it can also represent, for instance, emphasis. The quite flat melodic patterns of Czech speakers may cause confusions, which will be discussed later in section 3.2.

2.3. Socio-psychological aspects

Research has not been occupied only by the aspects influencing and realizing the foreign accent, it has also studied its consequences as the socio-psychological aspects of accents undoubtedly influence human behaviour. Deviation from what is generally acknowledged as the standard (as for instance the received pronunciation in the British English) or from the way the language is spoken by the majority is connected with stigmatization. While certain dialectal accents of a language automatically evoke assigning the speaker to an educated or a higher class, other accents have exactly the opposite effect on the listener. These can include both the dialects of an ethnic group, people living in a particular geographical area (but still speakers of the same language, for instance cockney speakers of English in London, African-Americans, southerners in the United States, etc.) or non-native speakers with a recognizable foreign accent. This stigmatization includes the

listener's automatically assigning a certain character feature to the speaker or judging their education and skills according to their speech. It is necessary to point out that this process is unconscious and the listeners are in most cases not aware that they are making judgements based on speech at all. Several studies were engaged in this problem, among those for instance Lev-Ari and Keysar whose research focused on native speaker and how credible they find an information delivered by a native speaker, speaker with a mild foreign accent and finally a speaker with a heavy foreign accent. The results of this study showed that the statements pronounced by a person with a non-native accent were perceived as less credible than the same statements read by a native speaker. No significant difference in credibility was noted between the speakers with mild and heavy foreign accent. (Lev-Ari & Keysar, 2010, cited in Hanzlíková & Skarnitzl, 2017, p.287ff).

Most of the research so far has, however, only been concerned with the responses of native listeners. Hanzlíková and Skarnitzl took inspiration from Lev-Ari and Keysar's study and used the same principle to extend the material on this topic and focus on how non-native listeners react, in terms of credibility, to people with a foreign accent (Hanzlíková & Skarnitzl, 2017). This study in particular included six native speakers (three from England and three from the United States), three Czech speakers and speakers whose mother tongues were French, Egyptian Arabic and Russian. The listeners were not only Czech but also Polish, Russian, Ukrainian, Slovak and Hungarian. The results proved that even non-native speakers evaluated the veracity of the statement in favour of native speakers as the statements of the group of non-natives were rated significantly less credible than those of the native group.

The negative perception of an accent does not lie only in the field of credibility. According to Gluszek and Dovidio, "individuals who have non-native accents are viewed as less intelligent, less loyal, less competent, and as speaking the language poorly" (Gluszek & Dovidio, 2010, p. 217). This form of discrimination can be perceived even more problematic in the case of English in particular. The worldwide spread of English caused that the language is now spoken in countries whose native languages are from different language families and whose structure and general rules differ vastly from those of English. As Gluszek and Dovidio point out, "listeners do not need to correctly identify the accent of a speaker to make predicted stereotypical judgements" (Gluszek & Dovidio, 2010, p. 218), which shows that the distrust may exists towards any non-native accent in general and not only towards an accent of a particular group. Another factor is the issue of migration. Nowadays, people of different backgrounds and ethnicities are found both in the countries whose native language is English and in countries with a completely different native language where English is used as a means

of communication (English as a Lingua Franca). As we could see, the discrimination, even though unconscious, takes place in countries like Britain or the United States and the foreigners' incorporation into the system can therefore be rather hard; Gluszek and Dovidio, for instance, mention Davila, Bohara, and Saenz's study (1993) showing that "that in the United States among employees of Mexican ethnicity, those with a non-English accent received lower earnings, independently of language proficiency" (Gluszek & Dovidio, 2010, p. 218). If, however, Hanzlíková and Skarnitzl's recent research is taken into consideration, the same problem will be most probably found even in the latter mentioned countries as even non-natives are prone to stigmatize foreign-sounding speakers. As can be understood from the studies already performed, foreign accent, meaning the individual segments realizing it as well as the consequences influencing the human behaviour, needs to be studied further in order to make better and more complex picture of the whole phenomena.

3. Czech English

3.1. Segmental aspects

Czech and English are representatives of two different language families: while Czech is a descendant of the Slavic language family, English comes from the Germanic language family. Therefore, the two systems differ a great deal not only in vocabulary but also in morphology, syntax and phonology. On the segmental level, the languages consist of different set of both vowels and consonants. Vowels are bearers of information and while the difference in pronunciation of consonants lies also in accompanying phenomena such as aspiration or devoicing, vowels do not vary according to their surroundings and the contrasts between the two systems can be seen right in the pronunciation of the vowels themselves (see in Fig1. and Fig2.). As can be seen below in Fig2., the Czech vowels tend to occur symmetrically in short-long pairs. The English vowels have the same tendency, however, their distribution differs from that of the Czech vowels. The only pair that is placed almost identically is /ɪ/, /iː/. While in Czech the long vowels ("tense" vowels) are pronounced at the same place in the oral cavity as the short ones ("lax vowels"; they are regularly placed on the right side of the short vowels in the table), the placement of the English long-short pairs is completely irregular. Fig1. shows that the long vowels /uː/, /iː/ and /ɔː/ are placed higher than their short counterparts, meanings they are pronounced as more closed, while /ɛː/, /ɜː/ and /ɑː/ are placed under the short ones, therefore pronounced as more open. This vertical differentiation is lacking completely in the Czech system as the long-short pairs are differentiated horizontally, that is whether they are pronounced more in the front or in the back. The space between the pairs is not regular either as can be seen, for instance, when comparing /ə/, /ɜː/, which lie right next to each other, and /ɒ/, /ɔː/, which are separated by far more space. In other words, it is quantity (length) which is the distinguishing feature in the Czech vowel system, while it is quality in English.

Unlike Czech, the English vowel system includes "schwa," /ə/, as in the word "support:" /səˈpɔːt/, which is crucial in the creation of the English rhythm. Schwa also has its long realization, /ɜː/, "fur:" /fɜː/. Another difference lies in the vowel "a" which has three different phonemes in English: /æ/ (e.g. "map:" /mæp/), /ʌ/ (e.g. "love:" /lʌv/), and long /ɑː/ (e.g. "smart:" /smɑːt/). These three realizations of the grapheme, although lying approximately in the same part of the table as the Czech ones, differ from each other and from the Czech /a/ and /aː/ both in the position of the tongue and the openness of the oral cavity. While the Czech /a/ is situated in the middle as well as its long realization, in English, only /ʌ/

lies in the centre of the lower part of the table and even that one is shifted higher when compared to the Czech counterpart. As was already said at the end of section 2.3, the reasons for pronunciation difficulties, whether it is more challenging to learn the pronunciation of similar or new sounds, have not been settled with certainty. In section 2.2, the phonemes /o/ and /ɒ/ were introduced as examples of the problematic vowels that are too similar for the speakers to look for any differences. But in fact, /ɒ/, as can be seen in the figures below, is in pronunciation closer to the long English /ɑ:/ than the short Czech /o/. The minimal difference between, for instance, /a:/ in the Czech verb "smát" (/sma:t/) and /ɑ:/ in the English adjective "smart" (/smɑ:t/) does not bring such confusion as when the non-native speaker interchanges, for example, /u/ for /ʌ/ as a representation of the grapheme "u" (after learning that the English letter "u" is very often read as /ʌ/), nevertheless, even these minimal deviations contribute to the non-native accent.

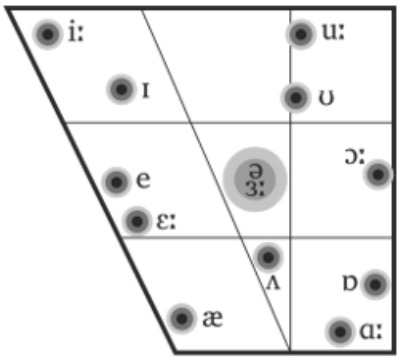

Fig1. Table of English vowels

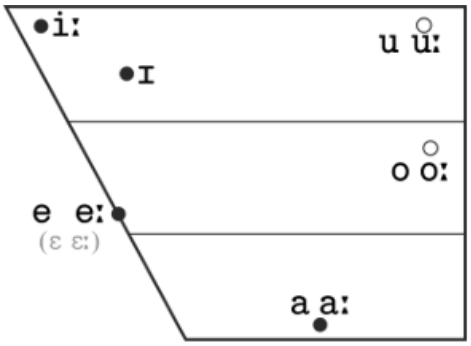

Fig2. Table of Czech vowels

It was already mentioned in section 2.2 that apart from vowels, also some of the consonants are typical only for English and for Czech. Those that do not occur in Czech are /θ/, /ð/, /ɹ/; on the other hand, those not to be found in English are the rhotic /r/, /ř/, /x/, /c/, /ď/, /ť/ and /ň/. These are the consonants that differ in manner and place of articulation, besides those there are also consonants that, although present in both languages, are accompanied by allophonic phenomena such as aspiration that give these consonants (in case of aspiration /p/, /t/, /k/) the English quality as an opposition to the Czech unaspirated /p/, /t/ and /k/. While aspiration is either present or not, therefore providing quite a clear distinction, the pronunciation of the consonants that are only present in English can be rather problematic for some non-natives and the manner of pronunciation as well as the perceived sound can vary. The typical English dental fricatives /θ/ and /ð/ provide a good example of that. On the one hand, if applying Major's theory (mentioned in section 2.2), as these two consonants do

not have any counterpart in Czech, the learners are likely to learn their pronunciation fully. On the other hand, we can notice that Czech learners tend to substitute them with the Czech consonants that are closest in pronunciation, those being the voiceless fricative /s/ or sometimes even /f/ and the voiced plosive /d/. This discrepancy can be blamed for instance on lack of motivation in case of those that are substituting the consonants, even though they can actually hear the difference but are not willing to make any effort (as was discussed earlier in section 2.1). It can also be caused by the learner's inability to hear any difference (i.e., the sounds are treated as *similar* in the framework of Flege's SLM). It also shows that the probability of success in SLA is highly individual and depends on many psychological as well as physiological aspects. None of the studies so far performed provides a clear definition of what is similar and what is new etc., which is not even fully possible as this is highly subjective. /θ/ and /ð/ are with no doubt a new sound to the Czech speakers as they are not present in the Czech language, however, if the speaker evaluates them as similar enough to, for instance, the Czech consonants /f/ or /s/ and /d/, they will automatically substitute them, not distinguishing the major differences.

A slightly different case can be found, for instance, in pronunciation of the consonants /v/ and /w/. While in English /w/ is widely spread in functional words (e.g., *what, where, why, with,* etc.), in Czech, /w/ is not used at all, and even though the grapheme as such is present in the alphabet, the pronunciation, even in borrowings from other languages, is automatically transformed into /v/. For instance, the word "website" in English is pronounced /websaɪt/; Czech borrowed the word, adjusted it, and despite keeping the initial consonant "w" in the word "webové", it is pronounced as /v/: [vɛbovɛ: stra:ŋkɪ]. The effect of this discrepancy between the two languages can be twofold: When a complete beginner starts to learn English, they automatically substitute /v/ for /w/ in the words where "w" is present in the written form (e.g. "website" pronounced as /vepsaɪt/ or "water" pronounced as /vɔ:tr/, etc.). The other variant ordinarily comes after certain time spent by learning English, when the learner is informed about the widespread use of /w/ in the language. The phenomenon described in this case is called "hypercorrection" and consists of the speaker automatically "correcting" their pronunciation of /v/ to /w/ even in words where the voiced fricative is correct (resulting in, for instance, words such as "very" being pronounced as /werɪ/ or "visit" as /wɪzɪt/, etc.).

Earlier in this section, aspiration was briefly mentioned as an important part of English and it represents one of the prominent aspects forming the native-like pronunciation of English. This feature, however, is completely absent in Czech and can, therefore, cause two problems, as has been foreshadowed in the discussion of the consonants /w/ and /v/: regular

Czech learner of English will most probably not aspirate the consonants /p/, /t/ and /k/ from their own initiative, resulting in unaspirated speech, which will sound very unnatural to the native English speaker. On the other hand, the technology of the 21st century provides us with movies and series in subtitled original versions and everyday contact with native speakers, and when the audience notices the aspirated sound, they can, even unconsciously, start applying it in their own speech without any rules which, in the end, contribute to the non-native accent in a similar way as not aspirating at all. The same problem may arise when these learners are informed about aspiration (for instance by their teachers) but are not provided further information such as that it is only applied to the voiceless plosives /p/, /t/ and /k/; that it is only realized in stressed positions or that, to the contrary, it is never realized after the sibilant /s/. Therefore, if the word "teacher" is pronounced as / ti:tʃə/ instead of [tʰi:tʃə], the foreign accent can be recognized as easily as when hearing the word "school" pronounced as [skʰu:l] instead of plain /sku:l/. So far, only the segmental levels of the two languages have been discussed, however, the suprasegmental level, as mentioned in section 2.2, plays a significant role in the foreign accent as well and therefore this topic will be approached in the next section.

3.2. Prosodic aspects

Prosody has a vast impact on any language and its features differ from language to language as well as individual components of the segmental level. While some of the features can be present in one language and be completely absent in the another, other phenomena are to be found in both the languages even though they are not as frequent or important in one as in the other, among those, for instance, linking. The difference between Czech and English in this aspect lies in a completely different realisation of words beginning in vowels while pronounced in sentences. While the English link the initial vowel to the sound at the end of the preceding word, a Czech speaker will frequently insert a glottal stop between any two words from which the second begins in a vowel. According to Šimáčková et al., when a Czech speaker glottalizes the unstressed syllables while pronouncing an English sentence, these syllables "gain prominence and the glottal stops contribute to the perception of syllable-timed rhythm." Moreover, "by giving prominence to wrong words, glottalization may also cause pragmatic confusions" (Šimáčková et al., 2014, p. 679). Glottal stop is only obligatory in Czech when "k", "v", "s" and "z" is followed by a vowel ("k oknu:" /kʔoknu/), in other contexts it is only optional but recommended for the sake of clarity. In English, glottal stop

indicates a special emphasis on a certain word, for instance, all the words in the sentence “He was born in autumn” will be linked together as follows: /ˈhi:wəzˈbɔ:nɪn‿ˈɔ:təm/, however, if the word “autumn” needs to be emphasised, a glottal stop will be inserted: “He was born in autumn, not in spring,” /ˈhi:wəzˈbɔ:nɪnˈʔɔ:təm | ˈnɒt‿ɪnsprɪŋ/.

Šimáčková et al. pointed out that glottal stops inserted in a wrong place in English disrupt the regular stress-based rhythm and the syllable-timed one is then perceived (Šimáčková et al., 2014, p. 679). Rhythm is another prosodic component that is present in both languages but is different in each. Schwa, as mentioned in section 3.1, is a key component of the English rhythm as it substitutes even for other vowels that would be pronounced in some words in different context. For instance, the word “have” will be pronounced fully when used as a lexical word, the verb of possession (“Does he have a car?” for instance /dəzˈhi:hævəˈkɑ:/), however, the pronunciation of “have” as an auxiliary will be reduced and thus contribute to the syllable-timed rhythm (“I have been there several times” /ˈaɪhəvˈbɪnðeəˈsevərl̩ˈtaɪmz/). Volín and Johaníková (2018) discuss the problem of what they call the weak-form words. These monosyllabic words include some prepositions, conjunctions and pronouns, and in a fluent speech their duration, pitch accents and sound level are lowered or reduced completely- therefore weakened: “Speakers whose mother tongue is not stress-timed English may find it difficult to acquire the habit of weakening. If that happens, their monosyllabic structural words stay quite prominent (perceptually strong) in the chain of words and may attract unnecessary attention” (Volín and Johaníková, 2018, p. 182). Apart from schwa, rhythm is also dependent on stress, which can cause big difficulties to Czech learners of English. The stress pattern of Czech places stress on the first syllable, regardless of the word-class. English, on the other hand, shifts the stress according to particular situation and therefore, one word can have two different placements of stress, for instance the word “rebel” places stress on the first syllable when used as a noun: /ˈrebəl/, but as a verb, the stress is shifted to the second syllable (accompanied by change of the vowels as well): /rɪˈbel/. For Czech learners of English, this can be particularly problematic as no such phenomena as stress-shift is to be found in Czech and thus they have to be learning the new vocabulary together with the placement of the stress. Inadequate or wrong learning can afterwards lead to incorrect pronunciation which will disrupt the natural flow, or the stress-based rhythm, and thus contribute to the foreign accent.

Another prosodic phenomenon, already discussed in the section 2.2, is melody. It has been briefly mentioned that confusion is likely while applying the Czech melodic pattern to English. In their study of speech melody, Volín et al. point out that the differences between

Czech and English can play a major role: “While English relies predominantly on intonational cues when expressing contrastivity and signalling major information, other languages (including Czech) may exploit different linguistic vehicles such as grammatical inflection or word order for the same purposes” (Volín et al., 2015, p. 107f.). While the expression of a thought of a native English speaker depends on the intonation, the Czech native speaker may consider the role of pitch variation “rather decorative” (Ibid, p. 108) which can, apart from a foreign accent, cause a misunderstanding as well. Intonation, as mentioned in section 2.1, expresses also an attitudinal stance of the speaker. However, the pitch variation in Czech is, in comparison to English, far more “flat;” in other words, it generally varies much less in any kind of attitude. To an English native speaker, therefore, a Czech person talking in English may sound bored and uninterested and, conversely, an American, whose natural pitch varies significantly more, will most probably sound unnatural or dishonest to the same Czech native speaker.

4. Methodology

4.1. Material

As has been discussed in the theoretical section of this thesis, both the segmental and suprasegmental features contribute to the foreign accent. Therefore, we came up with vowels, consonants and prosodic phenomena that could be considered – based on experience – most problematic for the Czech speaker for both the reasons of a relative similarity and complete dissimilarity. From vowels I focused on /æ/ and /ɒ/ as they are both rather similar to the Czech vowels /e/, /a/ and /o/; and schwa which is not present in the Czech vowel system at all. From consonants, I decided to examine /ŋ/ that is not present in Czech as an individual phoneme and is always accompanied by the consonant /k/ or /g/ and it has not yet been deeply studied whether this has any major impact on the Czech accent in English; dental voiced and voiceless fricatives /ð/, /θ/, which are completely absent in the Czech consonant system, and post-alveolar approximant /ɹ/, the English counterpart of the Czech /r/ which despite similarities, has a different place of pronunciation; and I also compared the pronunciation of /v/ and /w/, based on assumption, that Czech speakers might tend to interchange these two either because of not learning properly the pronunciation of /w/ or because of hypercorrection, using /w/ even in contexts where /v/ should actually be present. I also examined aspiration because of its presence and importance in English and complete absence in Czech. On the prosodic level I examined three phenomena: linking, due to its relative absence in Czech; stress-placement, for the Czech tendency to place stress on the first syllable; and regressive assimilation of voicing, which is a process that takes place in Czech very regularly but it almost never happens in English.

These features have been examined in the speech of ten female speakers taken from the database of the Institute of Phonetics, Faculty of Arts, Charles University, that had been previously evaluated as speakers with very strong Czech accent and who read a standard BBC news article (6 different texts, with an average duration of 4 minutes) in the sound-treated recording studio of the Institute of Phonetics. Particular words were selected to contain the target features (see the numbers and criteria in Fig3. below) and then randomly with no previous knowledge of whether they were pronounced correctly or incorrectly. The numbers shown in the last column present the final number of the examined phenomena (all speakers added up), not all of the numbers correspond to the requested count as not all the texts contained enough target words (e.g. frequently, there was lack of lexical words containing the

consonant /ð/ and /θ/, etc.). I aimed for a certain regularity, therefore in every category there were several words that were repeated in every article (e.g. *American* targeting initial schwa, *attack* targeting initial schwa and /æ/, *with* targeting /ð/, etc.) or at least a similar type of words (e.g. words starting with *con-*; *effort-injured* due to their unpredictable stress on the first syllable; *Russia-China* due to their final "a" pronounced as schwa, etc.)

Phenomena	**Criteria**	**Criteria**	**Criteria**	**Final number of examined phenomena**
/æ/	min. 10 items			113
/ɒ/	min. 10 items			124
/ə/	min. 20 in the first syllable	min. 15 internal	min. 5 final (-er)	361
/ŋ/	min. 10 followed by k/g + word-internal			94
/θ/	ideally 10			58
/ð/	min. 10 grammatical	ideally 10 "other" (lexical-*mother, further,* etc.)		217
/v/ / /w/	/w/: min. 10 pronounced as /v/	/v/: min. 10 pronounced as /w/		/v/: 162 /w/: 212
Prevocalic /ɹ/	min. 10 items + distinguish initial, medial and after plosive			103
Aspiration	min. 10 initial syll. stressed	min. 10 later syll. stressed	min. 5 with /s/ preceding	307
Stress	min. 10 two-syllabic words with 2nd stressed	min. 10 three-syllabic words without the first syllable stressed	min. 10 four and more-syllabic words without the first syllable stressed	342
Linking	min. 10 between grammatical words	min. 10 words where the second word is lexical		227
Assimilation of voicing	min. 10 items			64

Fig3. Table of the criteria of the research.

4.2. Analysis

All the targeted phenomena were evaluated by listening without acoustic analysis. Vowels /æ/ and /ɒ/ and consonants /v/ and /w/ were evaluated as 0 when pronounced completely as Czech (/e/ and /a/ in case of /æ/, /o/ in case of /ɒ/), 2 when pronounced correctly, 1 when the pronunciation was somewhere between those two. Schwa was examined in more detail, with the specific realization noted; that is whether the speakers pronounced schwa or whether they replaced it by another vowel (e.g. /e/, /o/, etc.). The same process, i.e. noting the specific realizations, was also applied to consonants /ŋ/, /ð/, /θ/ and /ɹ/. Aspiration was evaluated on basis of its presence or absence. Linking was in phrases where which were evaluated either as linked or not linked (with a glottal stop; only those words were chosen that would most probably be linked in the speech of a native speaker and, ideally, would not be glottalized even because of emphasis). Stress was evaluated in previously chosen words with no regards whether it was placed correctly or incorrectly with simple marking the stressed syllable. Regressive assimilation was evaluated as present or missing. Pronunciation of all the evaluated words was checked in dictionaries and words that might cause confusion because of difference in British and American pronunciation (e.g. the word *last* can be pronounced as /lɑ:st/ in British English and /læst/ in American English) were not evaluated. Correspondingly, personal and geographical names that cannot be considered as a part of common knowledge were not examined.

The examined phenomena were evaluated in a special tier in Praat (Boersma & Weenink, 2018), the data were extracted by means of a Praat script and afterwards processed in an Excel table and in R programme (R Core Team, 2015). The final results were transformed into individual charts by means of *ggplot2* (Wickham, 2009).

In section 5, at first, the results of individual suprasegmental and segmental phenomena are going to be presented (sections 5.1.-5.10.) and then in section 5.11., I am going to summarize the results of individual speakers.

5. Results and discussion

5.1. Stress

The Czech tendency to place stress on the first syllable in English due to the Czech regular stress is widely known. As can be seen in Fig4., the speakers stress the first syllable in about 50% of words and in few cases they put the stress on a completely wrong syllable (e.g. *communiqué, communities, unanimously*, etc.). The word that causes problems in two-syllabic words is the word *effort*, which tends to be pronounced as /ɪ'fɔ:rt/; the word *injured* caused a similar problem.

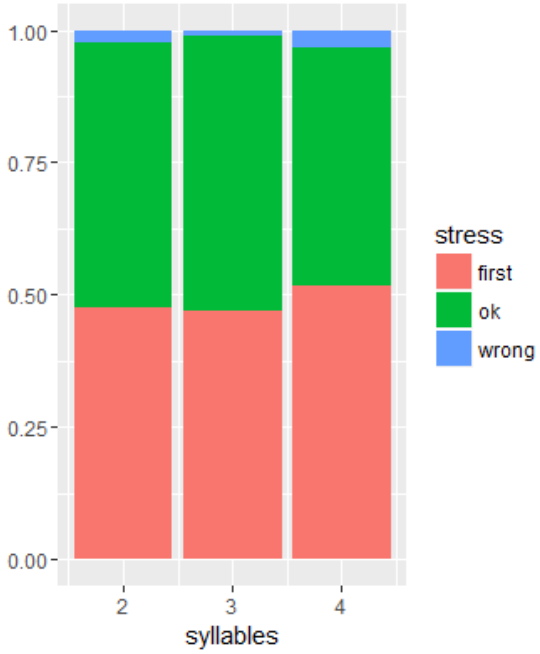

Fig4. Proportion (in %) of the placement of stress
in two-syllabic, three-syllabic and four and more-syllabic words.
"First" marks stress placed incorrectly on the first syllable, "ok" marks
stress on the correct syllable, "wrong" marks stress placed
on a completely wrong syllable.

Let us now examine the realization of stress in the ten speakers (Figures 5–7 for two-, three-, and four and more-syllabic words, respectively). While the proportions presenting two and three-syllabic words only show a slight increase in placement of stress on the first syllable (except for SMRA whose stress placement in three-syllabic words is actually more accurate than that in two-syllabic words), we can observe, that the four and more-syllabic words, there is a slight decrease in comparison to the three-syllabic words in speech of a few speakers. This might be possible due to the fact that most of the correctly pronounced words were nouns created by the suffix -ation (e.g. *allegation, communication, investigation,* etc.), whose accent is always placed on the same syllable and which may be easier for the speakers to

remember. Those that were incorrectly pronounced, with the first syllable stressed, on the other hand, are words where stress placement is much less transparent as they do not contain any shared features as a suffix, etc. (e.g. *authority, economic, international,* etc.) and whose stress-placement has to be either learned or deduced.

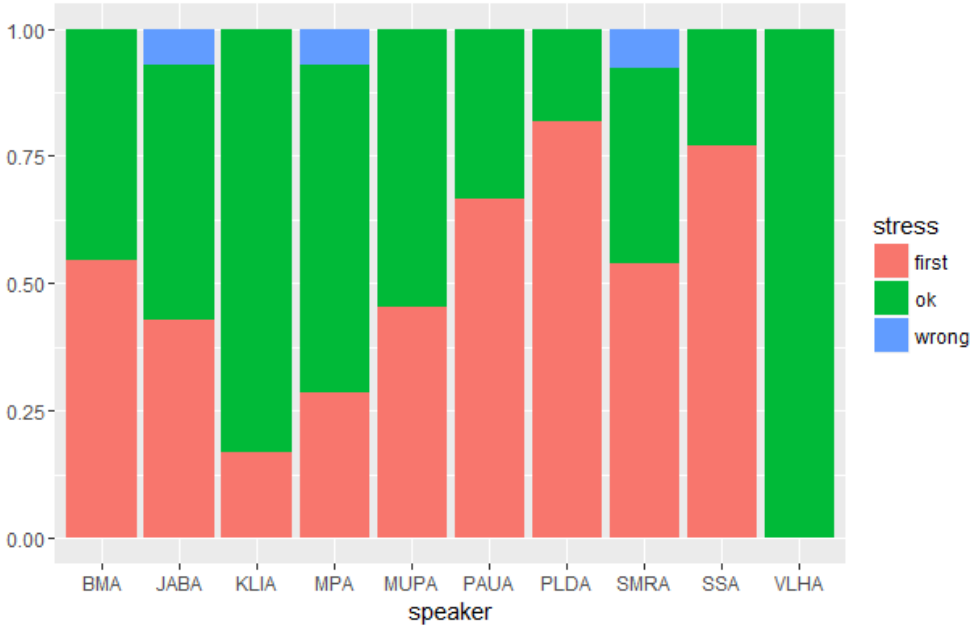

Fig5. Proportion (in %) of the placement of stress in two-syllabic words in speech of individual speakers

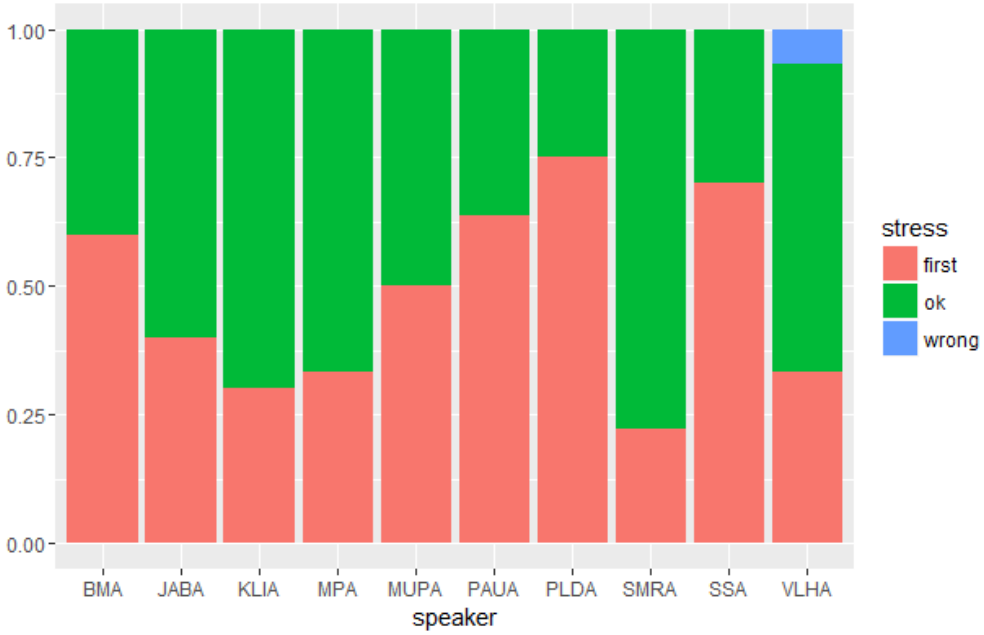

Fig6. Proportion (in %) of the placement of stress in three-syllabic words in speech of individual speakers.

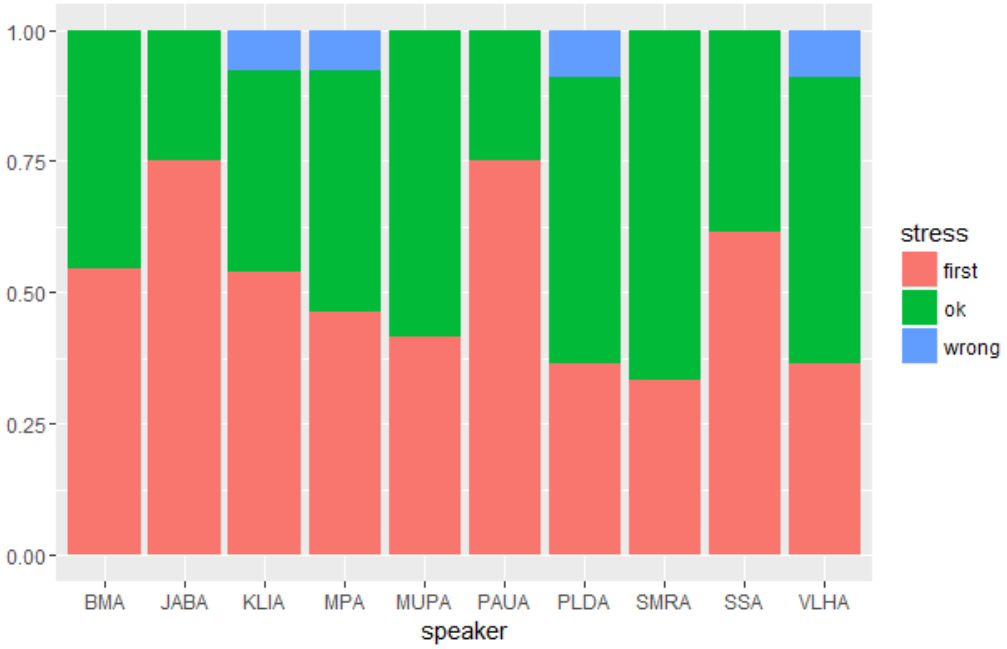

Fig7. Proportion (in %) of the placement of stress in four and more-syllabic words in speech of individual speakers.

5.2. Linking

As was discussed in section 3.2., glottalization is generally recommended for the sake of clarity in Czech. Fig8. Shows that glottalization is very frequent in our Czech speakers of English, especially when the word with an initial vowel is lexical, where only one of the speakers (SSA) linked about 50% of examined words. Grammaticalwords tend to be linked to the previous word slightly more but the difference is only noticeable in the speech of MPA and SMRA. This might also be caused by the length of the words as the grammatical ones are shorter and therefore the speakers tend to link them together more than two multiple-syllable words. Another reason for that might be convenience. If the speaker is to glottalize for instance both the words “at” and “a,” /ʔætʔə/, or “of” and “about,” /ʔɒvʔəˈbaʊt/, they have to make much more effort than when linked together.

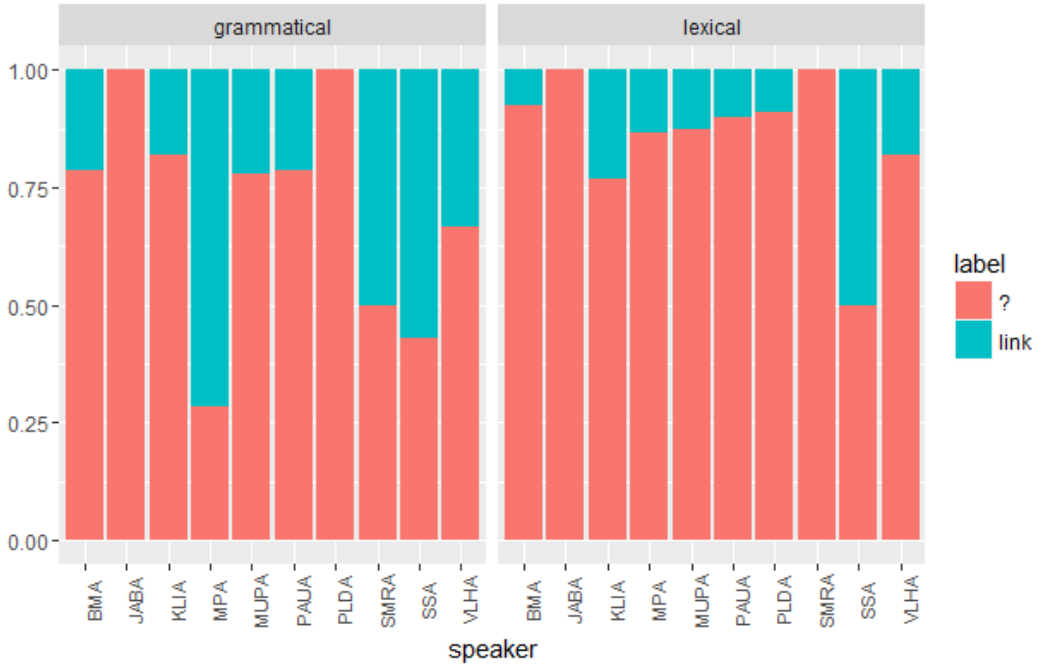

Fig8. Proportion (in %) of linking vs. glottalization (shown as ?) in speech of individual speakers.

5.3. Assimilation of voicing

Regressive assimilation has been examined without regards to whteher the speakeres made pauses between the two words or whether they linked the two words together. When the speakers separated the words, the assimilation automatically did not take place. For that reason, Fig9. and Fig10. present both the proportions of results with (Fig9.) and without pauses (Fig10.). There still remains another problem that the pauses had not been clearly defined and it is not clear whether the two words were only separated or whether a regular pause was inserted. It is, therefore, to be examined further in future research. Nevertheless, as can be seen in Fig10., assimilation does intrude into the Czech English as almost half of the words examined were assimilated. It was presupposed that the more the speakers link the words together, the more they would assimilate. However, this was not confirmed as, apparently, the speakers tend to link words ending in a consonant and the following words beginning in a consonant as well, assimilating the final consonant, while glottalizing words beginning in a vowel (as it is usual in Czech).

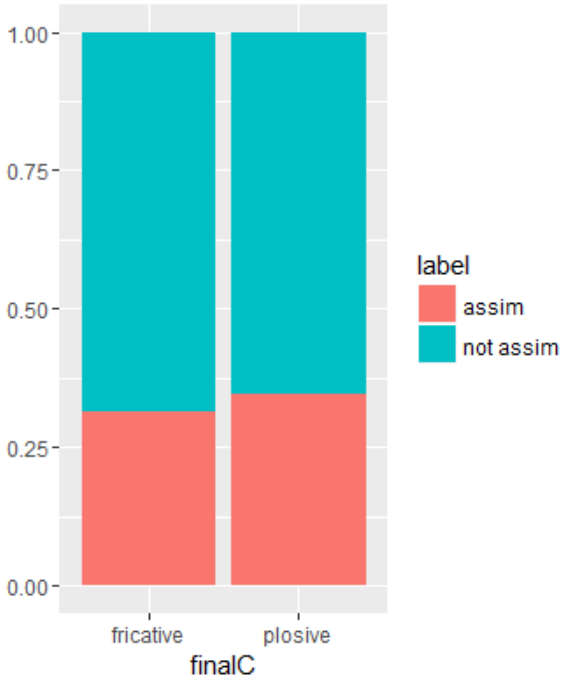

Fig9. Proportion (in %) of assimilation of voicing.

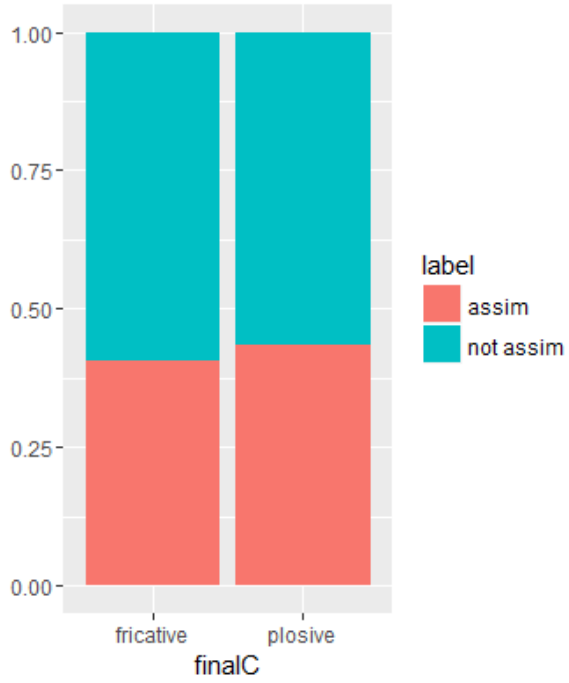

Fig10. Proportion (in %) of assimilation of voicing without pauses (see text).

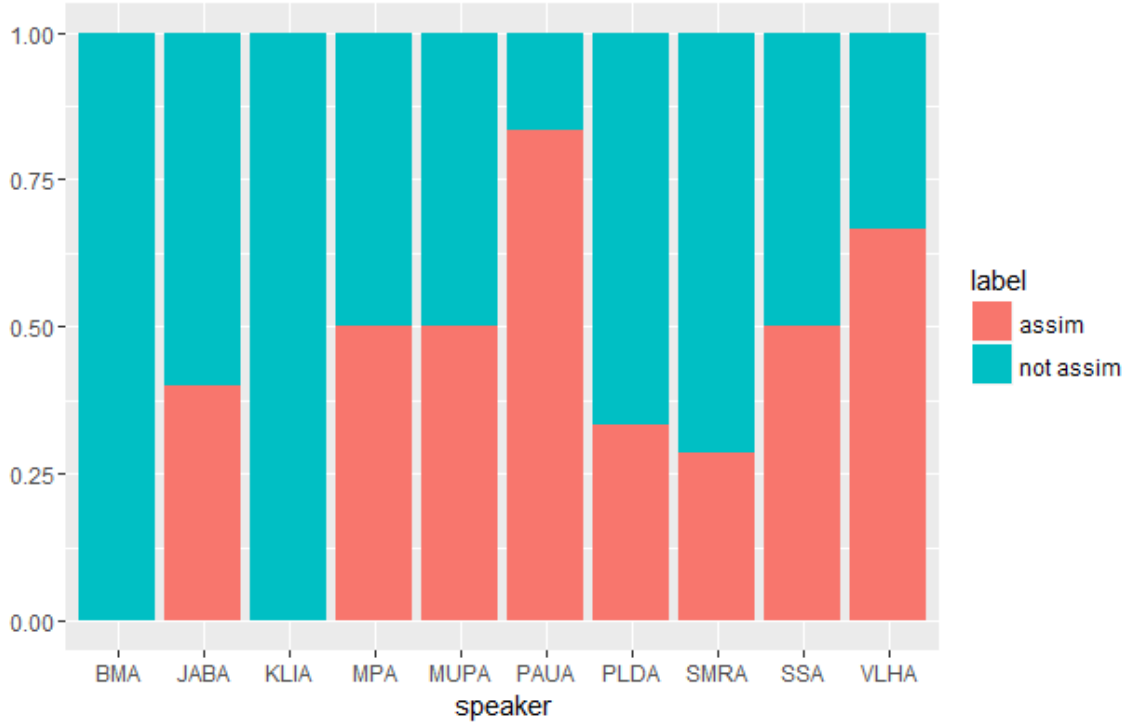

Fig11. Proportion (in %) of assimilation of voicing in speech of individual speakers.

5.4. Aspiration

Aspiration was examined from the point of view of the placement of plosives in the words: initial, plosives placed later in the word and those after ‘s,’ all of them being part of a stressed syllable. The presupposition was that the speakers would either not use it more or less anywhere or, to the contrary, placing it to all plosives, no matter if the aspiration actually is supposed to be there or not (as, for instance, after the sibilant ‘s’). Fig12. shows that aspiration is more widely used in the initial plosives but only about 1/3 of examined words were aspirated when the plosive occurred later in the word. About 25% of words included aspiration in a position where it was not supposed to be. Fig13. presents the distribution of aspiration in individual plosives. In all categories, /k/ tends to be aspirated the most as the physiological aspects of its pronunciation make it easier for the speaker to aspire it than /p/, which is generally the least aspirated plosive, or /t/, which lies between the two.

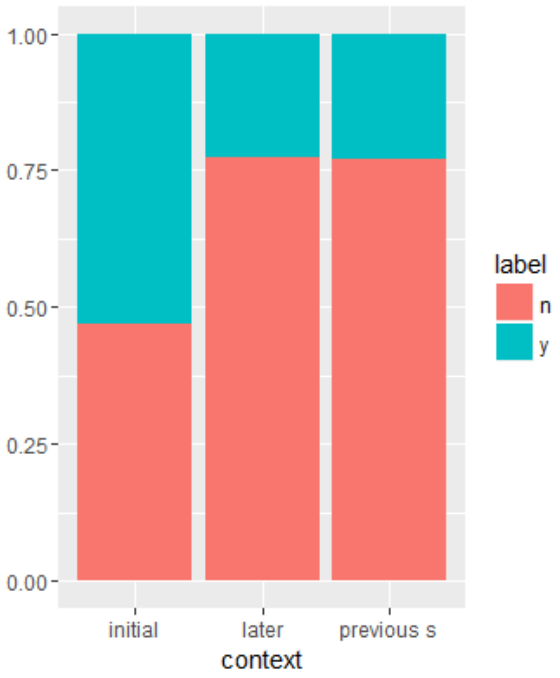

Fig12. Proportion (in %) of aspiration based on context; “n” marking no aspiration, “y” marking aspiration.

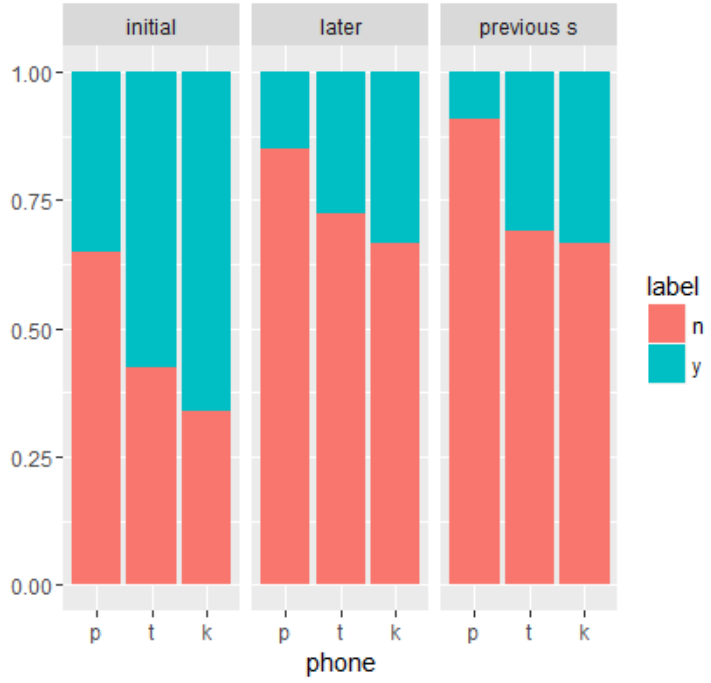

Fig13. Proportion (in %) of aspiration based on context showing its realization in individual plosives; “n” marking no aspiration, “y” marking aspiration.

The proportion in Fig14. confirms that the speakers tend to aspire the initial plosives the most and that even those who aspire almost all initial plosives (e.g. SMRA) have problem with aspiring plosives later in the words. Aspiration after the sibilant ‘s’ seems to cause only individual problems and mostly to those who aspire the initial consonants the most.

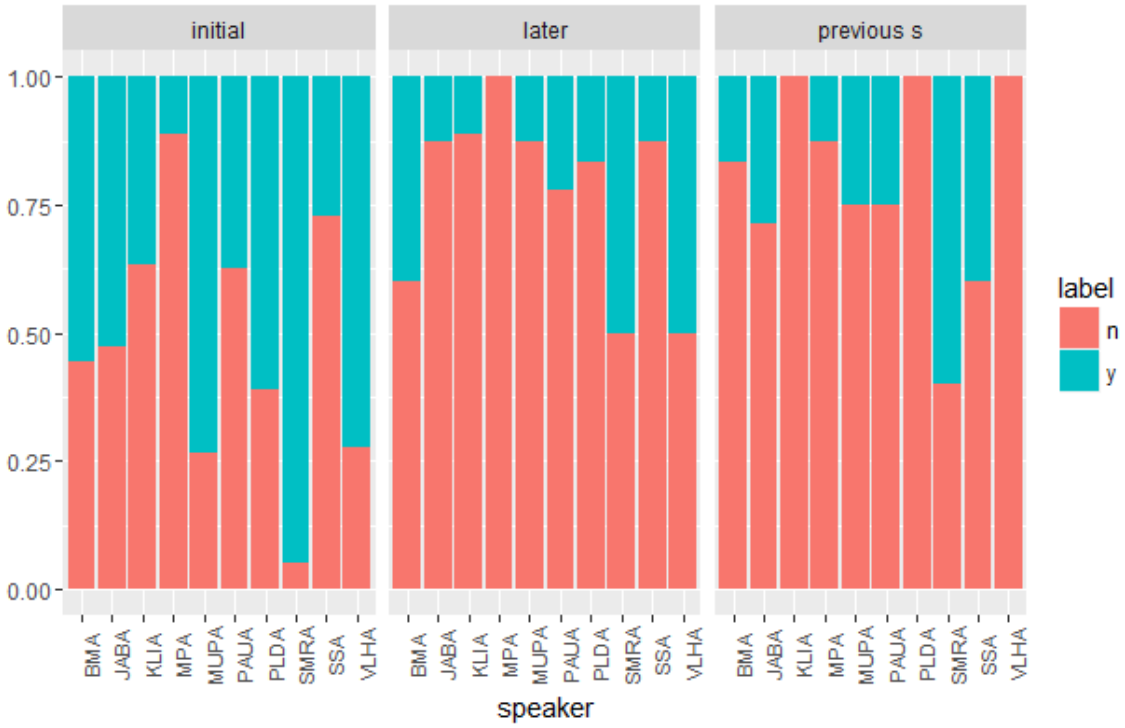

Fig14. Proportion (in %) of aspiration based on context in speech of individual speakers; “n” marking no aspiration, “y” marking aspiration.

5.5. Labiodental fricative /v/ and bilabial glide /w/

The examination of the consonants /v/ and /w/ was based on a presupposition that the speakers will either substitute the glide by the voiced fricative as is usual in Czech or they will, due to hypercorrection, tend to insert /w/ even to places where /v/ is actually supposed to be. Figure15. shows that the presupposition was only partly correct as the /v/ was only confused with /w/ in about 25% of words, and it only caused bigger problems to speakers PLDA and SMRA.

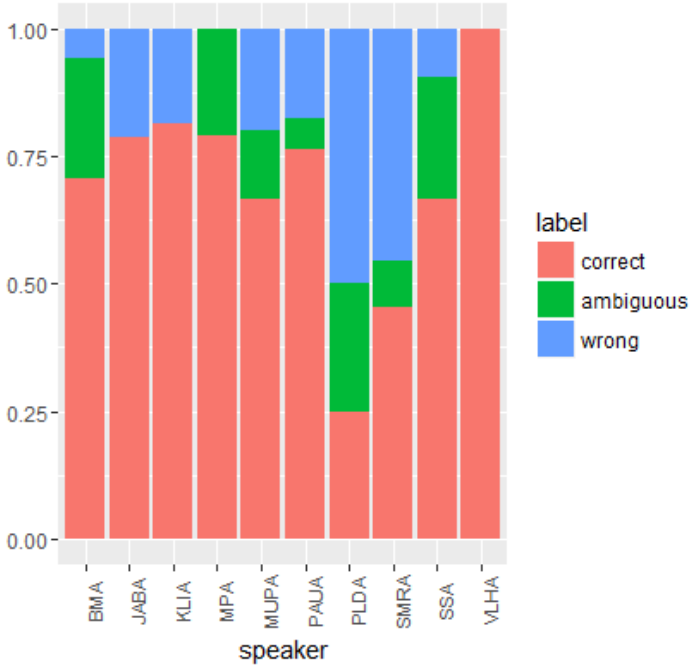

Fig15. Proportion (in %) of pronunciation of /v/ in speech of individual speakers; "correct" marking correctly pronounced /v/, "wrong" marking pronunciation of /v/ as /w/, "ambiguous" marking pronunciation somewhere in between /v/ and /w/.

The pronunciation of the glide /w/ is more complex. The correctness or incorrectness of pronunciation seems to depend on word type. As was discussed in section 3.1., /w/ is more widely spread in functional words and the non-natives speakers might notice it more and therefore learn to pronounce it. As the grammatical words are a lot more probable to be repeated in a short speech segment than a particular lexical word, speakers can be expected to learn their pronunciation. This is confirmed in Fig16., which shows that absolute majority of speakers pronounced /w/ in grammatical words more correctly than in the lexical ones.

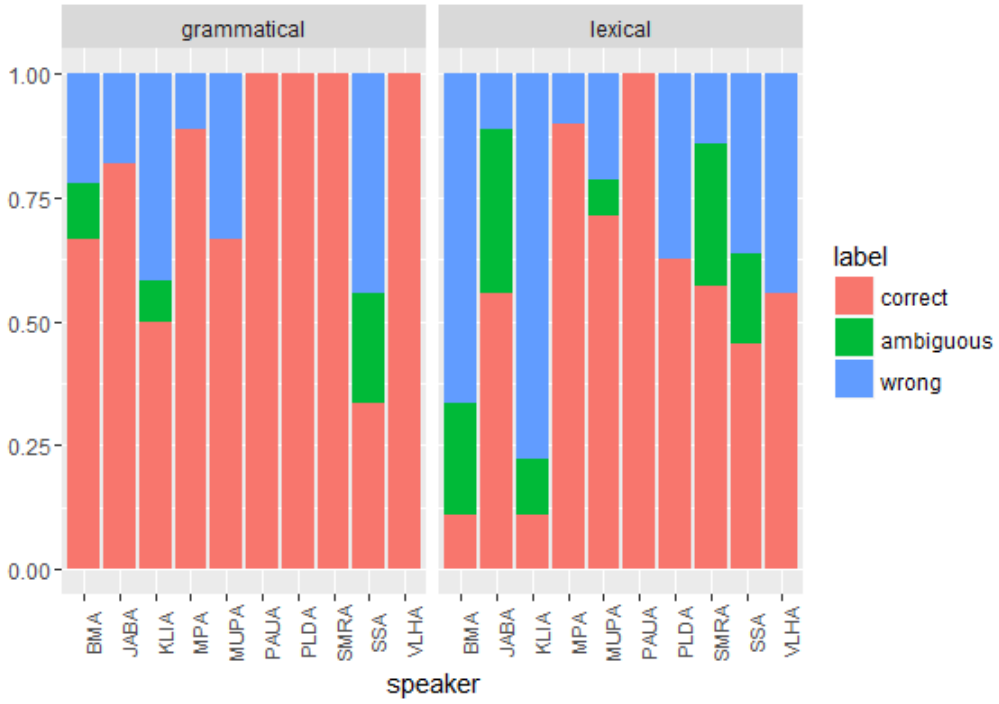

Fig16. Proportion (in %) of pronunciation of /w/
in grammatical and lexical words in speech of individual speakers;
"correct" marking correctly pronounced /w/, "wrong" marking pronunciation
of /w/ as /v/, "ambiguous" marking pronunciation
somewhere in between /v/ and /w/.

5.6. Dental fricatives /ð/ and /θ/

The voiced dental fricative /ð/ belongs to the consonants that may seem similar to the Czech consonants and thus cause substitution. As can be seen in Fig17., this was confirmed; /ð/ was pronounced correctly in only about 30% of all the examined words and in about 50% it was substituted by /d/. In order to get more specific data, the words were further divided into three categories, shown in Fig18.: grammatical and lexical words and the conjunction "with," which, as was discovered during the research, behaves in a completely different way than the rest of the words. In grammatical words (including articles, pronouns, etc.), /ð/ is pronounced as /d/ in about 80% of examined words; /t/ occurred once in the article "the" and was most probably influenced by the previous plosive /t/ at the end of the previous word "that." In lexical words, however, speakers pronounced /ð/ correctly in more than 60% of examined words and only used /d/ in about 30% of cases. This is in a complete opposition to the results of the examination of the consonants /v/ and /w/ in section 5.5. and might be caused by the fact that those grammatical words that contain /ð/ (e.g. *that, the, those,* etc.) tend to occur together in English and as the tongue movement in pronouncing the interdental fricative might be complicated for the Czech speakers, they tend to substitute it by the voiced

alveolar plosive to make the pronunciation easier. The examined lexical words, however, mostly contained /ð/ somewhere inside of the word structure (e.g. *other, further, although,* etc.) where it was separated from the surrounding context, making it less complicated for the speakers to pronounce /ð/ correctly. Unlike grammatical and lexical words, the conjunction "with" did not contain the consonant /d/ at all and in about 45% of examined words it was substituted by the voiceless alveolar plosive /t/, in a few cases also by the voiceless interdental fricative /θ/ and the sibilant /s/. This is mostly dependant on the sonority of the surrounding consonants.

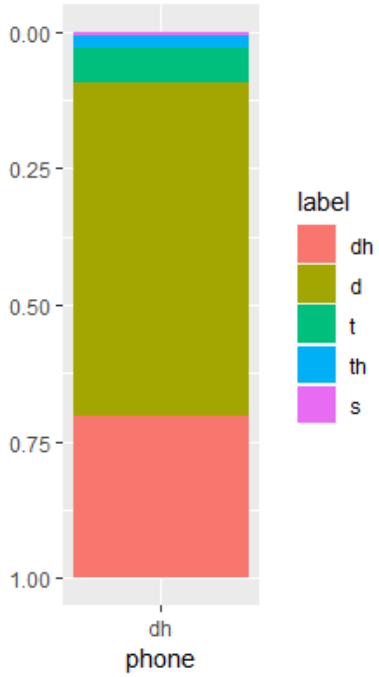

Fig17. Proportion (in %) of realizations of /ð/, where "dh" represents /ð/ and "th" represents /θ/.

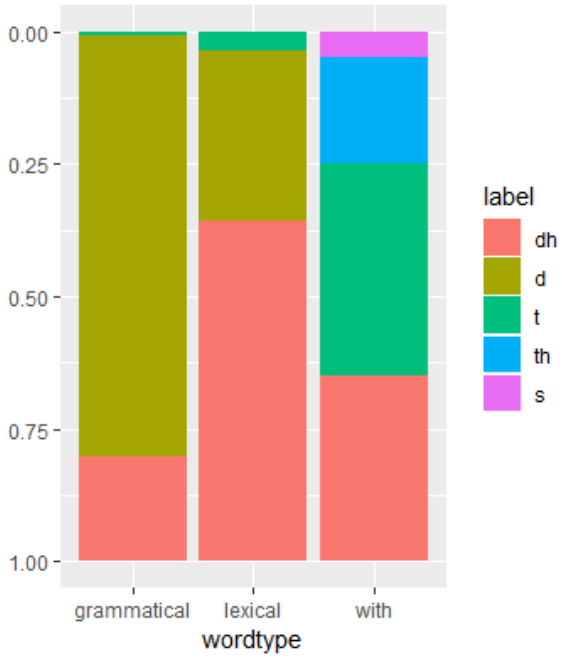

Fig18. Proportion (in%) of realizations of /ð/ in grammatical and lexical words and the conjunction *with*, where "dh" represents /ð/ and "th" represents /θ/.

The Proportion in Fig18. presents the pronunciation of /ð/ in speech of individual speakers which confirms prevailing tendency to substitute by /d/, however, it is interesting to compare it with Fig20. showing how individual speaker pronounce the voiceless counterpart /θ/. Except for one speaker, VLHA, who has no problem with pronouncing /θ/ but only pronounces /ð/ correctly in about 30% of examined words, the proportion of /ð/ of the rest of the speakers more or less corresponds to the proportion of /θ/. It can be, therefore, assumed,

that the success rate of learning the pronunciation of one is connected with the pronunciation of the other.

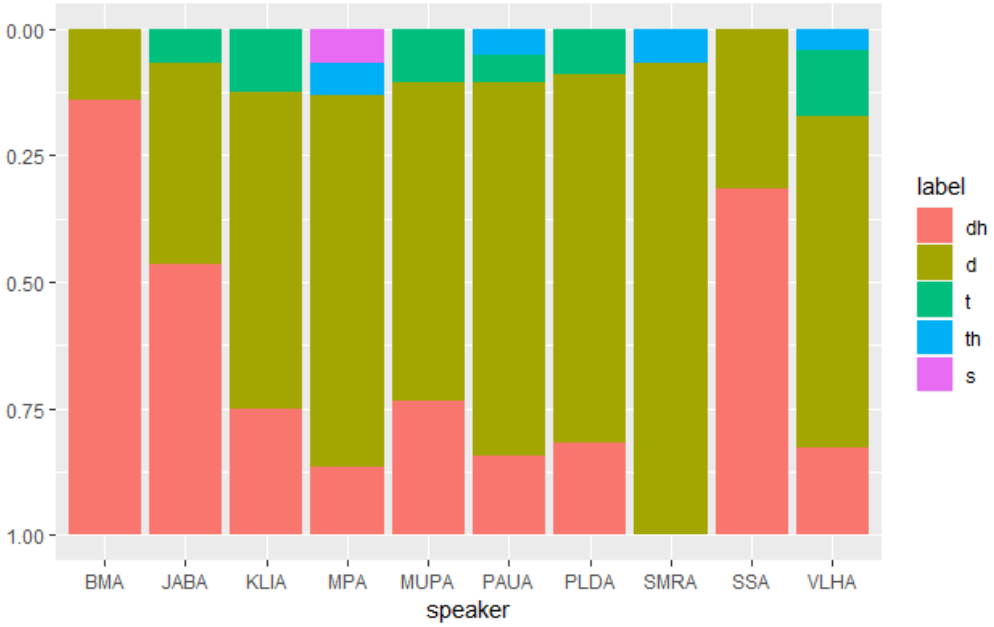

Fig19. Proportion (in %) of realizations of /ð/ in speech of individual speakers, where "dh" represents /ð/ and "th" represents /θ/.

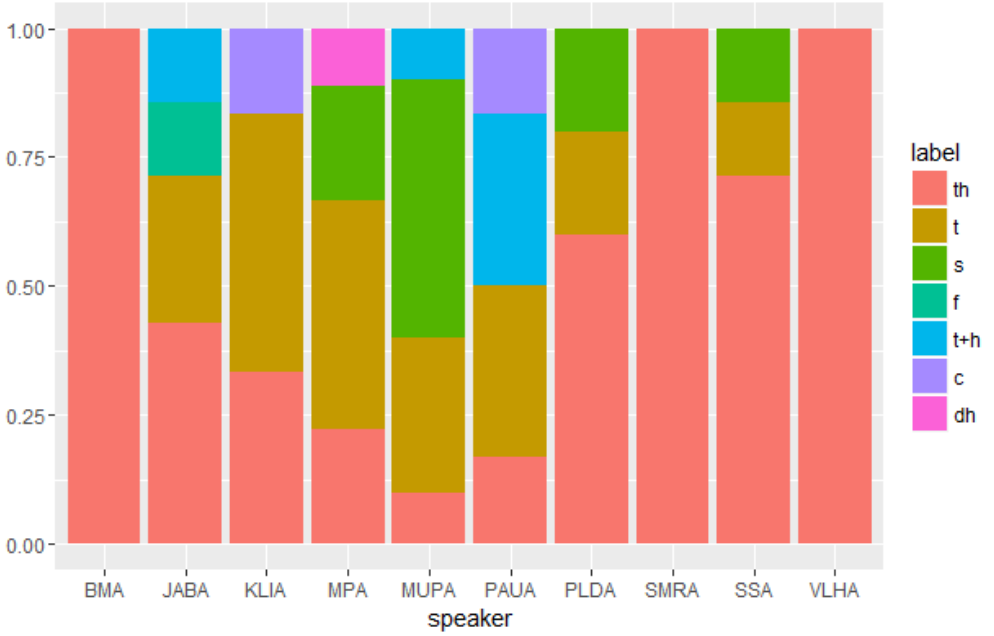

Fig20. Proportion (in %) of realizations of /θ/ in speech of individual speakers, where "dh" represents /ð/ and "th" represents /θ/.

As can be seen in Fig21., the voiceless interdental fricative /θ/ has a slightly bigger success rate than its voiced counterpart but it tends to be substituted by more consonants than /ð/. It mostly tends to be replaced by consonants /t/ and /s/ but as has been noted in few cases, the speakers also substituted it by /f/ (*three*), /c/ (*thirty, three*), /ð/ (*mouth*, most probably

influenced by the following words *disease* beginning in a voiced consonant) and the consonant cluster /th/ (*authority, strengthening, thousand*).

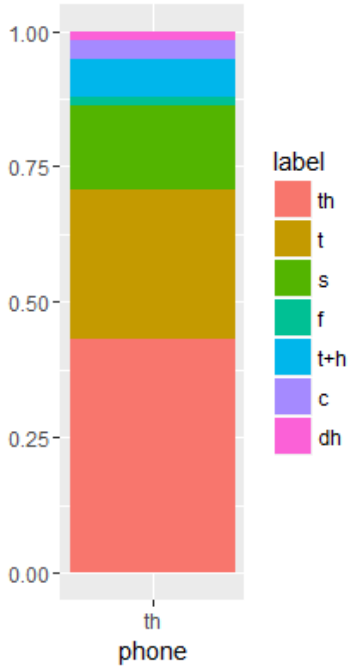

Fig21. Proportion (in %) of realizations of /θ/,
where "dh" represents /ð/ and "th" represents /θ/.

5.7. Velar nasal /ŋ/

The words chosen for the examination of /ŋ/ were divided into three categories: -ing forms, where /ŋ/ is supposed to be pronounced, words that contain /ŋ/ within a morpheme (e.g. *Washington, among, warnings,* etc.) and finally words that are supposed to be pronounced with /ŋk/ (e.g. *bank, think*, etc.) and that were, based on previous experience, expected to be pronounced incorrectly. Fig22. shows that even though the success rate in -ing forms is bigger than within morpheme, about 65% is still pronounced incorrectly.

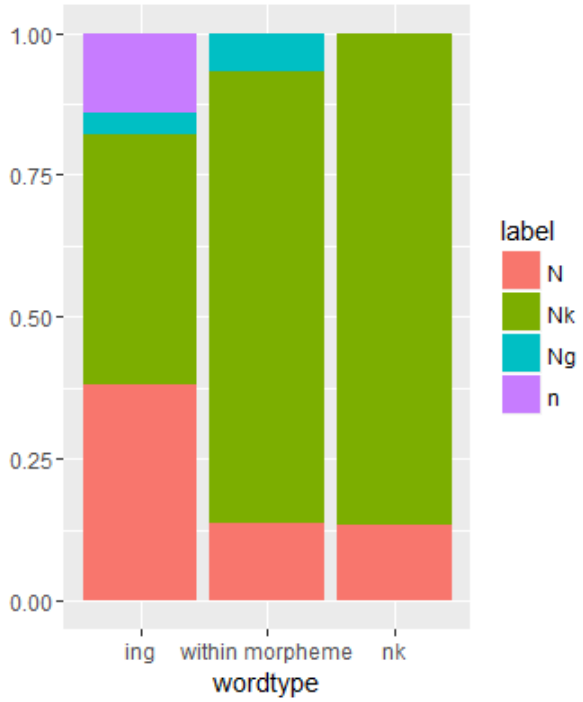

Fig22. Proportion (in %) of realizations of /ŋ/ in -ing forms, within morpheme and in words where /ŋk/ is supposed to be pronounced, where "N" represents /ŋ/.

The speakers pronounced almost 45% of examined words with /ŋk/ and about 15% of words ended in /n/ which, as shown in Fig23., was a prevailing problem in speech of three individual speakers: MPA, MUPA and SMRA. The tendency to add /k/ to /ŋk/ might be related to the fact that even though /ŋ/ does not function as an individual phoneme in Czech, when it occurs, it is followed by /k/ (e.g. /baŋka/, /fliŋk/, /mamiŋka/, etc.). There was also /ŋg/ noted in the word *running* which was most probably influenced by the following word *dispute*. The tendency to add /k/ to /ŋ/ within morpheme is even bigger, only about 15% of words were pronounced correctly, the cluster /ŋg/ was noted in words where the written form includes "ng" (*ringleader, king, wrongdoing*).

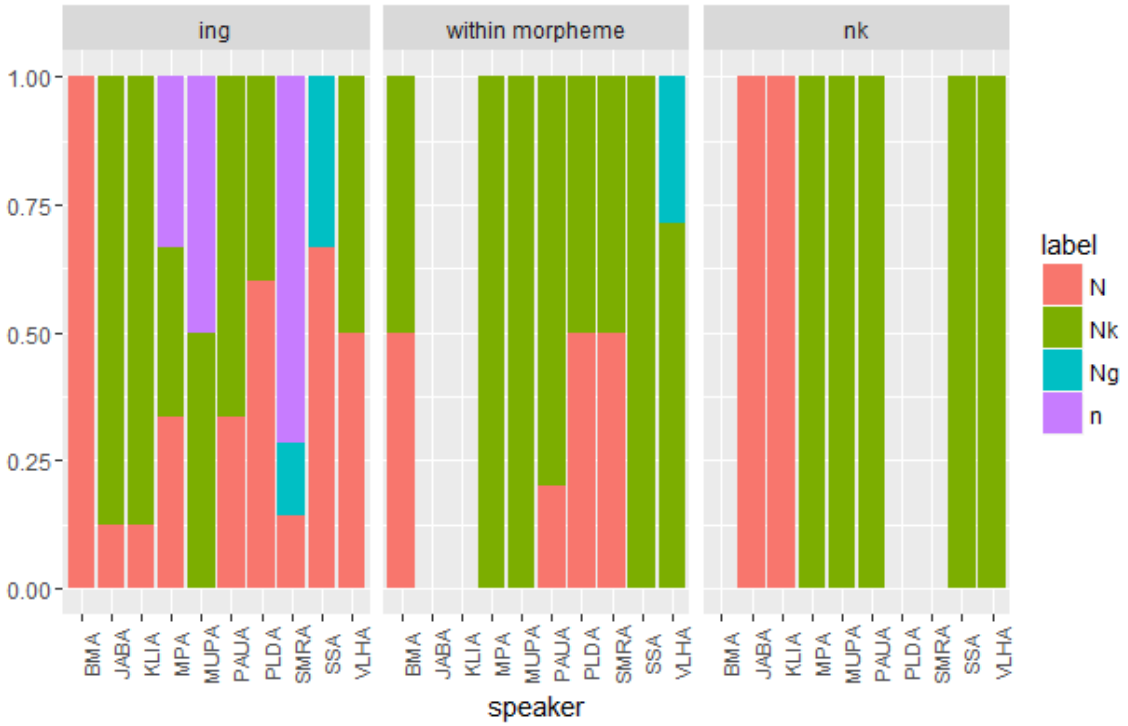

Fig23. Proportion (in %) of realizations of /ŋ/ in -ing forms, within morpheme and in words where /ŋk/ is supposed to be pronounced, in speech of individual speakers, where "N" represents /ŋ/.

5.8. Approximant /ɹ/ and trill /r/

The problem of interchanging of the approximant /ɹ/ and the trill /r/ is widely known and for that presupposition I also included this consonant into the research. However, the results shown in Fig24. were rather surprising as it does not cause difficulties as much as had been expected. In order to get more accurate results, the examined words were divided into those that contain /ɹ/ after a fricative (e.g. *three, free,* etc.), in the initial position, in the medial position and after a plosive. The difference between individual columns is negligible and in all contexts the trill was only pronounced in about 15% of examined words.

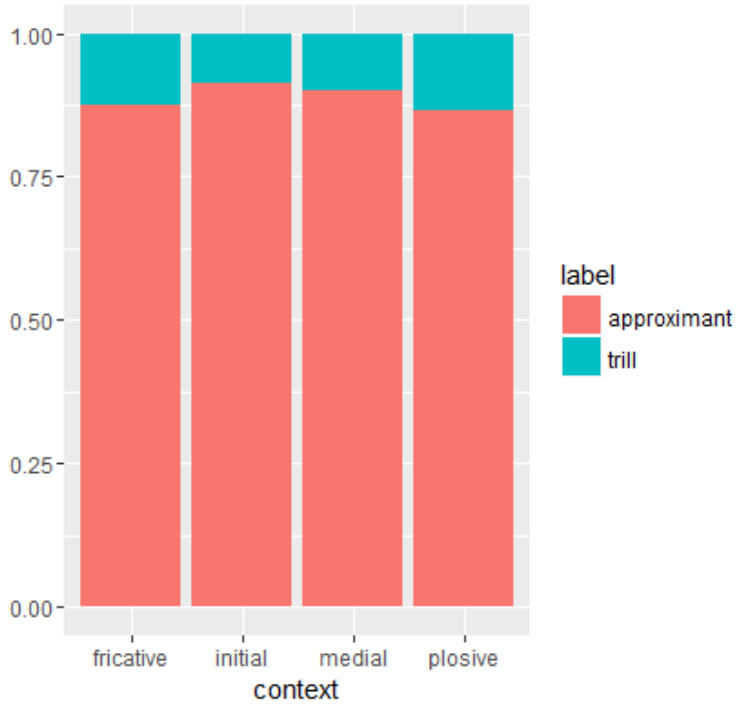

Fig24. Proportion (in %) of realizations of /r/ after fricatives,
in the initial position, medial position, and after plosives.

More particular results can be seen in Fig25. which shows that the interchanging of the trill and the approximant is more of an individual phenomenon and does not present any predictable regularities. In general, the trill tends to occur most after a plosive (empty columns were caused by lack of words suitable for this category).

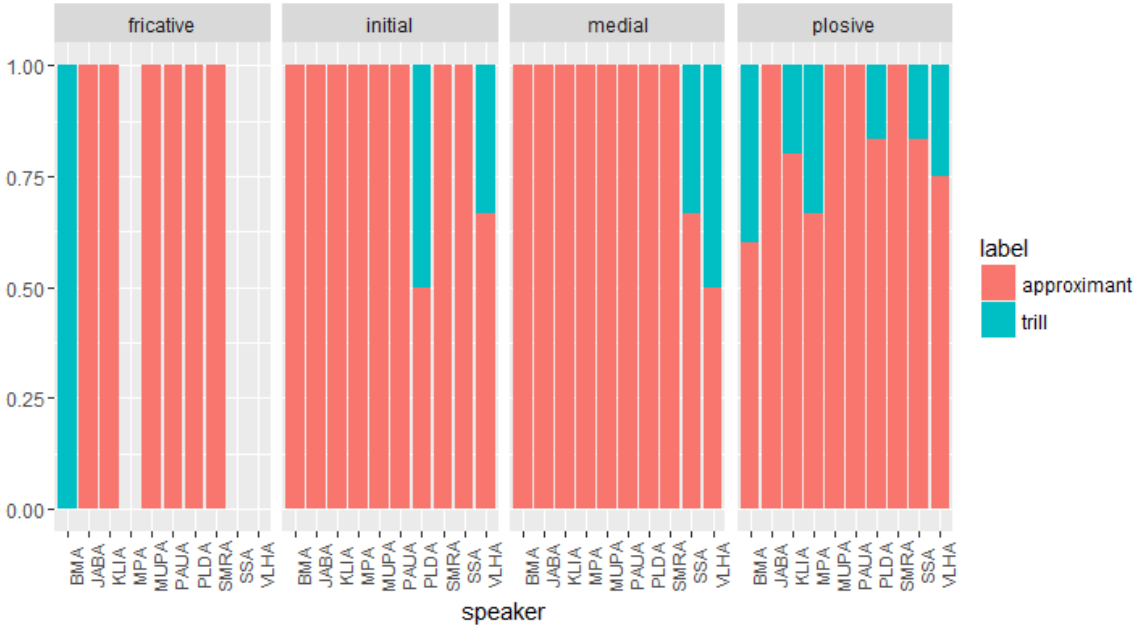

Fig25. Proportion (in %) of realizations of /r/ in speech of individual speakers.

5.9. Open-mid front vowel /æ/ and open back vowel /ɒ/

The relative closeness in pronunciation of the English vowel /æ/ to the Czech vowels /e/ and /a/ and of the English vowel /ɒ/ to the Czech vowel /o/ was presupposed to cause problems to Czech speakers resulting in the English vowels being substituted by the Czech ones. Fig26. shows that this supposition was correct as almost all words containing /æ/ and /ɒ/ were either pronounced completely with a Czech accent or with an ambiguity (i.e. the pronunciation could be defined neither as Czech nor as native). As the vowel /æ/ was only evaluated from the point of view of foreign/native accent, the data do not include information about the frequency of substitution by /e/ and /a/. I would, therefore, like to broaden the study further and pay attention to whether the speakers tend to replace /æ/ more by /e/ or /a/ and in whether there is any connection between the phonetic context and the individual substitution.

According to Fig26., there is not really any regularity to be found between the pronunciation of /æ/ and /ɒ/ in speech of individual speakers. There is a difference between British and American English in that while British English pronounces /ɒ/, the American is pronounced as /ɑ:/. This discrepancy, however, has not been taken into consideration for this is a regularity in all the words containing /ɒ/ in British English and, moreover, the aim was to study the difference between the English /ɒ/ and the Czech /o/. As can be seen in the figure below, this difference did not cause any bigger problems as the ambiguous pronunciation corresponds more or less to the proportion presenting the pronunciation of /æ/.

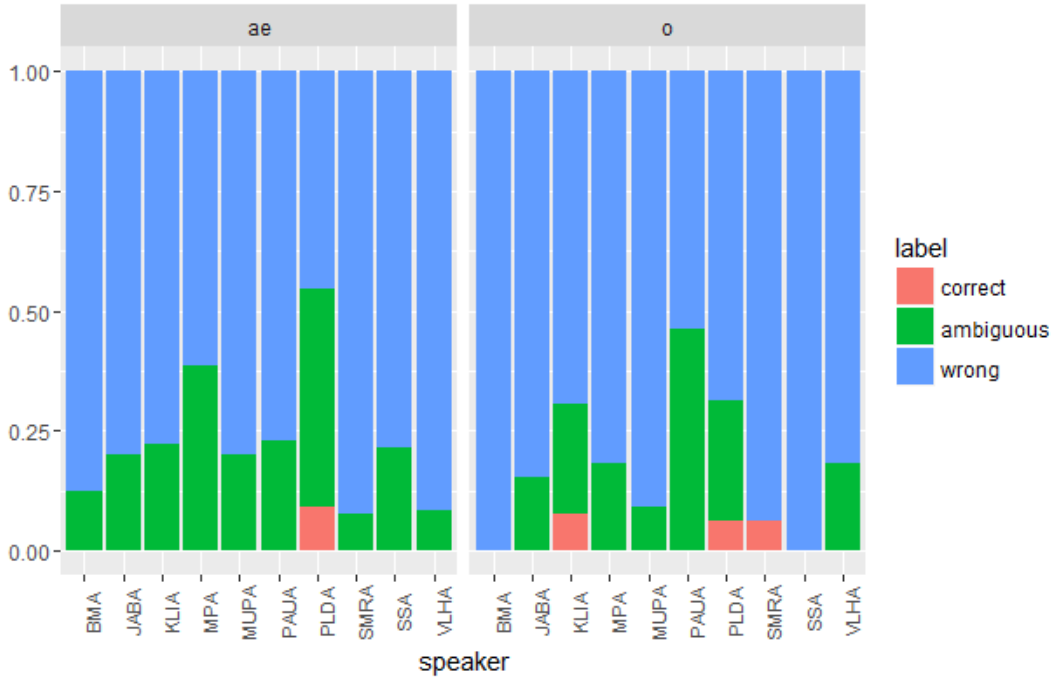

Fig26. Proportion (in %) of realizations of /æ/ and /ɒ/ in speech of individual speakers, "correct" marking /æ/ and /ɒ/ pronounced correctly, "wrong" marking pronunciation as /e/, /a/ or /o/, "ambiguous" marking pronunciation somewhere between the English and Czech vowels.

5.10. Central lax vowel schwa

Schwa, that lies in the middle of the table of Vowels presented in section 3.1., is as already discussed in previous sections of the theoretical part, responsible for the English rhythm, as it is not only used in the words where it is actually supposed to be, but it also in the weakened forms of words. For the purpose of this study, only the words that include schwa in their regular pronunciation were examined. Fig27. presents that in absolute majority of words, schwa was replaced by /e/ and /o/. The column showing schwa+ /r/ was examined on words that were ending in the suffix -er and informs that most of the speakers (except for MPA, see Fig29.) have the tendency to insert /r/ at the word-endings, corresponding to American English, even those whose pronunciation generally bears more features of the British English.

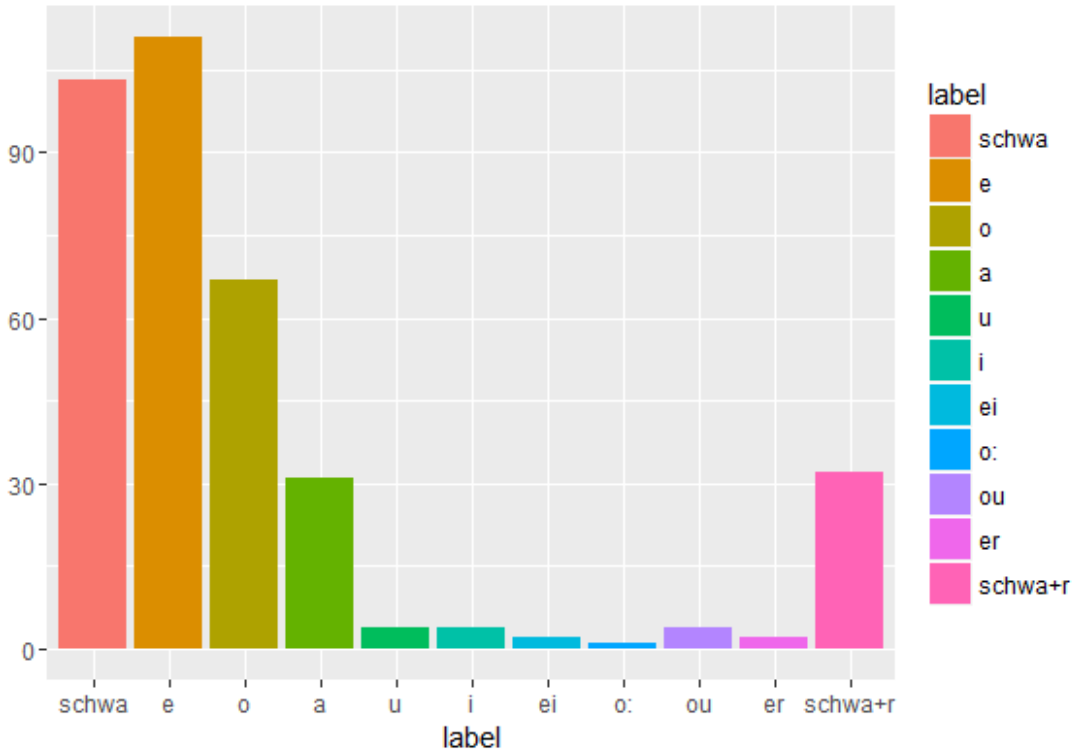

Fig27. Proportion of occurrences of individual realizations of schwa.

Besides the most common realizations of schwa, also some least expected occurred; examples of the particular words are shown in the table below (Fig27.). Some of those were not only noted in speech of a single speaker, /u/ in the word *supplies* was noted two times, /i/ in the word *allegation* was noted three times, digraph /ɔʊ/ in the word *unanimously* occurred two times.

e	American	international	item	government	allow
o	control	committee	economic	political	community
a	successful	idea	Russia	American	attack
u	supplies	surprise	together		
i	Palestinian	allegations			
ei	affordable	cooperative			
o:	efforts				
ou	unanimously	propose	protesters		
er	attackers	another			

Fig28. Table of examples of realizations of schwa.

Fig29. shows that the degree of substitution of schwa by /e/ is very similar in speech of all speakers (except for smaller deviations, as, for instance, in case of MPA, whose pronunciation of schwa is better than the others' and whose tendency to replace it by /e/ is, therefore, smaller). The percentage of replacement of schwa by /o/ is also very similar (again, except for, for instance, BMA and PLDA, who use /o/ less than the others due to the use of /u/ which is not to be found in the speech of the other speakers). The individual differences are then created by use of the less frequent substitutions, which, beside other factors, also depend on the frequency of the particular words in the texts, etc.

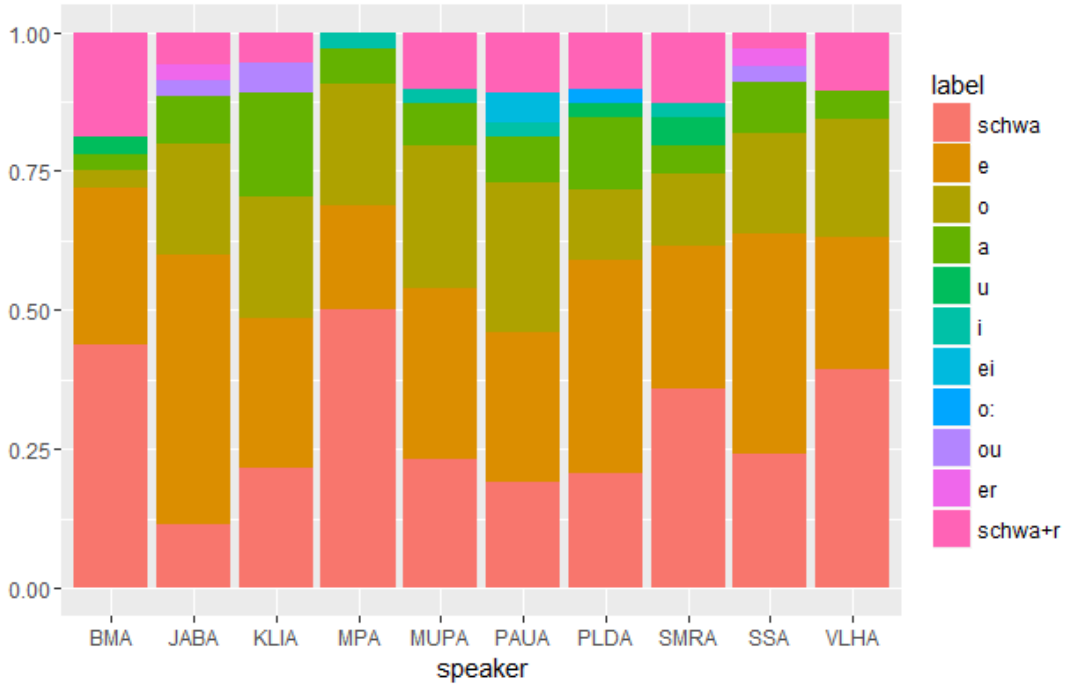

Fig29. Proportion (in %) of realization of schwa in speech of individual speakers.

5.11. Summary of the segmental and suprasegmental features in speech of individual speakers

The results in individual paragraphs are presented in order from phenomena that cause least or no problems at all to those that caused biggest problems to the particular speakers. This order was chosen to present which phenomena are only problematic in individual discourses and which can be generally seen as problematic.

5.11.a Speaker BMA

This speaker has a very good pronunciation of /ð/ (only substituting by /d/ in about 20% of words) and /θ/. Also /ŋ/ in -ing forms was correct in 100% of words, however, within morpheme, about 50% were followed by /k/. /ɹ/ was pronounced correctly in initial and medial positions but it was replaced by a trill in almost 50% of words after a plosive. While there was no bigger problem noticed in the pronunciation of /v/ as well as with /w/ in grammatical words (both were pronounced correctly in about 70% of words), in grammatical words only about 10% were pronounced correctly and the rest was replaced by /v/. Assimilation caused no problem at all. The pronunciation of schwa only presented problem in about 50% of cases, substitution by /e/ was noted in about 25% of examined words. The speaker tends to put stress on the first syllable from 50 to 60% of all, two-syllabic, three-syllabic and four and more-syllabic words. The biggest problem in the speech was presented by linking with more than 75% of glottalized grammatical words and about 90% of glottalized lexical words, and the pronunciation of /æ/ and /ɒ/ which are in absolute majority of cases substituted by the Czech vowels.

5.11.b Speaker JABA

What was causing no problem at all was the pronunciation of /ɹ/, also /v/ was pronounced correctly in about 75% of cases; /w/ in grammatical words was correct in almost 80% of words, in lexical words, over 50% were correct, however, there was also a lot of ambiguity (about 35%). The dental fricatives are problematic partly, as almost 50% of words with /ð/ was correct and about 40% substituted by /d/; /θ/ was pronounced correctly in about 40% of cases and the rest was substituted by more different consonants (about 30% of /t/, about 15% of /f/ and about 15% of /th/). Aspiration was also problematic only in some contexts, about 55% of initial plosives were aspirated but only about 20% of later plosives and about 30% of plosives after ‘s.’ From the segmental category, the biggest problems were seen in the pronunciation of /æ/ and /ɒ/, where about 80% were substituted by the Czech vowels, and schwa with only about 15% of correct pronunciation, about 45% of substituting by /e/, 20% /o/, about 10% /a/. The consonant /ŋ/ was followed by /k/ in about 85% of examined words. On the prosodic level, the pronunciation of two and three-syllabic words was approximately equal with about 55-60% of correct stressing, but in four and more-syllabic words about 75% of words have stress on the first syllable. Linking was absolutely not realized and both grammatical and lexical words were glottalized.

5.11.c Speaker KLIA

The smallest problem was seen in assimilation (not assimilating at all), /ɹ/ which was only replaced by trill after plosive in about 30% of examined words, and /v/, which was correctly pronounced in about 80% of cases. However, /w/ presented a problem in about 50% of grammatical words and in 90% of lexical words. /ð/ and /θ/ was only pronounced in about 25-30% of examined words, /ð/ was substituted by /d/ in about 60% of words, /θ/ was substituted by /t/ in about 50% of words. The pronunciation of /ŋ/ was very similar to the previous speaker. The vowel /æ/ was ambiguous in about 25% of words, in 75% substituted by /e/ and /a/; /ɒ/ was correct in about 5% of cases and about 30% were ambiguous, the rest was pronounced as Czech /o/. Schwa was also problematic: about 20% were correct, about 30% substituted by /e/, about 20% by /o/ and about 15% by /a/. While stress-placement was rather handled in two-syllabic and three-syllabic words (about 80% of correct pronunciation and about 75% in three-syllabics), about 50% of four and more-syllabic words had stress on the first one. About 75% of both, grammatical and lexical words were glottalized.

5.11.d Speaker MPA

This speaker did not have a problem with /ɹ/, only after plosive almost 40% of words contained a trill. /v/ was pronounced correctly in about 75% of cases, /w/ was correct in almost 85% of words. Schwa was correct almost in 50% of examined words and only about 20% substituted by /e/. Although about 75% of words had a correct stress-placement in two-syllabic words and only a deterioration was noted three-syllabic words, about 50% of four and more-syllabic words had the stress placed on the first syllable. Interesting was the difference in the results of linking between the grammatical and lexical words: while almost 75% of grammatical words were linked, only about 80% of lexical words were glottalized. Most significant problems on the segmental level were noted in the pronunciation of /ŋ/ (in -ing forms, about 35% /ŋk/, and about 40% of /n/; within morpheme /ŋk/ only); /ð/ (only about 15% of correct pronunciation, about 70% substituted by /d/, also substituting by /th/ and /s/); /θ/ (about 25% of correct pronunciation, about 50% of words substituted by /t/); /æ/ and /ɒ/ (both about 20% of ambiguous pronunciation, the rest substituted by /e/, /a/ and /o/). Aspiration was problematic as well in the speech of this speaker, only about 25% of initial plosives were aspirated, no aspiration at all was noted in later plosives but only about 15% of plosive after ‘s’ were aspirated. On the prosodic level, assimilation was noted in about 50% of

examined words. Although almost 75% of grammatical words were linked together, only about 20% of lexical words were linked.

5.11.e Speaker MUPA

This speaker had no problem with the pronunciation of /ɹ/. About 70% of /v/ was pronounced correctly, /w/ had about 65-70% of correct pronunciation in both grammatical and lexical words. While almost 75% of initial plosives were aspirated, only about 15% of later plosives contained aspiration and about 25% of plosives were aspirated after 's.' The stress-placement was surprisingly best handled in four and more-syllabic words: about 45% of first syllables were stressed in two-syllabic, 50% in three-syllabic words, in four and more-syllabic words almost 60% of stress-placement were correct. Linking caused problems in about 75% of grammatical words and about 85% of lexical words and about 50% of examined words were assimilated. From consonants, big problem was caused by the pronunciation of /ð/ and /θ/: only about 25% of /ð/ were pronounced correctly, about 60% of were substituted by /d/, about 15% by /t/; about 10% of /θ/ were pronounced correctly, lot of different realizations were noted- /t/ in about 30%, /s/ in about 50%. About 80% of /æ/ in the examined words were substituted by /e/, /a/ and about 90% of /ɒ/ was realized as the Czech /o/. Schwa was pronounced correctly in about 20% of words, about 30% were substituted by /e/ and the rest by /a/ and /i/. Glottalization caused problems in about 75% of examined grammatical words and about 85% of lexical words.

5.11.f Speaker PAUA

The pronunciation of /ɹ/ caused, again, no problem at all. /v/ showed results of about 75% of correct pronunciation and just a little ambiguity. The speaker proved excellent pronunciation of /w/ in both grammatical and lexical words. In -ing forms, only about 35% of syllables with /ŋ/ were followed by /k/ and about 65% were correctly pronounced with /ŋ/; however, about 20% of /ŋ/ and 80% of /ŋk/ were noted within morpheme. The pronunciation of /æ/ and /ɒ/ was rather ambiguous as about 25% of words with /æ/ were pronounced somewhere in between and about 75% substituted by /e/ and /a/. In case of /ɒ/, about 50% somewhere between and about 50% substituted by the Czech /o/. Schwa was substituted by several different realizations: about 20% of words were pronounced correctly with schwa, about 25% were substituted by /e/ and /o/ and about 30% were realized as /a/, /i/, /o:/. The speaker only pronounced 15- 20% of words with /ð/ correctly, about 70% were substituted by

/d/, the rest was substituted by /t/ and /θ/. The words containing /θ/ had a very similar results, about 20% of words were pronounced correctly and lot of different realizations were noted- /t/ in about 30% of examined words, about 30% of the consonant cluster /th/, the rest realized as /c/. Aspiration occurred in only about 40% of initial plosives and about 25% of later plosives. The prosodic level caused rather significant problems in the speaker's discourse. About 65% of two-syllabic and three-syllabic words had stress on the first syllable and about 75% of first syllables were stressed in the four and more-syllabic words. Approximately 75% of grammatical words and about 85% lexical words were glottalized. Almost 85% of words contained regressive assimilation.

5.11.g Speaker PLDA

This speaker showed biggest problem with /ɹ/ as almost 50% of examined words contained a trill. In -ing forms, about 60% of words were pronounced correctly with /ŋ/, the rest as a consonant cluster /ŋk/; within morpheme the pronunciation was about 50% correct and 50% /ŋk/. While about 60% of the initial plosives were aspirated, only about 20% of later plosives contained aspiration; no aspiration was inserted after 's.' The pronunciation of /v/ and /w/ in the discourse of this speaker proves to be an example of hypercorrection: only about 25% of words were pronounced correctly as /v/, about 25% were ambiguous and almost 50% were substituted by /w/; the glide was pronounced completely correctly in grammatical words and about 65% of /w/ were correct in lexical words. While the pronunciation of /ð/ and /θ/ in speech of other speakers is approximately balanced, in this discourse, about 60% of words with /θ/were correctly pronounced and only about 20% were substituted by /s/ and /t/, while only 15- 20% of words with /ð/were pronounced correctly, about 70% were substituted by /d/ and the rest was substituted by /t/. /æ/ presented a lot of ambiguity, about 45%, about 10% were correct and the rest is substituted by /a/ and /e/; about 5% of words with /ɒ/ were correct and about 25% ambiguous, the rest was pronounced with the Czech /o/. Schwa was pronounced correctly in about 20% of words, approximately 40% were substituted by /e/, there were only noted realizations by /o/, /a/, /i/ and /o:/. While assimilation occurred in about 30% of examined words, stress-placement and linking caused bigger problems: approximately 75-80% of words had the stress on the first syllable in two and three-syllabic words, however, almost 65% of four and more-syllabic words were stressed correctly. The discourse lacked linking both in grammatical and lexical words.

5.11.h Speaker SMRA

This speaker performed excellent pronunciation of /ɹ/ and /θ/, which is interesting especially in comparison to the pronunciation of the voiced counterpart /ð/ which was perceived as /d/ in almost all of the examined words. While about 50% of words containing /v/ were pronounced with /w/, in grammatical words, /w/ was pronounced correctly in 100%. In lexical words, in approximately 40% /v/ was substituted by /w/. Aspiration was very well realized in the initial position (about 90% of initial plosives aspirated), about 50% of later plosives were aspirated and over 50% of plosives after 's' were aspirated. This gives evidence that once learned, the speaker has tendency to overuse it. The speaker places stress on the first syllable in about 50% two-syllabic words, while about 75% of stress-placement in three-syllabic words was correct and about 65-70% were correct in four and more-syllabic words. About 25% of examined words were assimilated. The only significant problem in pronunciation of consonants was noted in words containing /ŋ/: in -ing forms, only about 15% was pronounced correctly with /ŋ/, use of /ŋg/ was also noted (probably caused by the influence of the following words) and /n/ is absolutely prevailing; within morpheme, /ŋ/ and /ŋk/ alternate. /æ/ was ambiguous in about 10% of examined words, the rest was substituted by /e/ or /a/; /ɒ/ was pronounced correctly in about 5% of words, the rest was realized as Czech /o/. Approximately 35% of words with schwa were pronounced correctly and about 25% substituted by /e/, the rest was substituted by /o/, /a/, /u/ and /i/. While grammatical words were linked in about 50%, lexical words were completely glottalized.

5.11.i Speaker SSA

The pronunciation of /ð/ and /θ/ was rather corresponding, about 70% correct, the rest substituted by /d/, /t/ and /s/. In -ing forms, about 65% is pronounced correctly with /ŋ/ and the rest of the words were pronounced with /ŋg/, which might be caused either by the following words or by the written form of the words, /ŋ/ within morphemes was always pronounced as /ŋk/. The approximant /ɹ/ was pronounced correctly in the initial position but only about 65% in medial position and about 80% after a plosive. While about 65% of words containing /v/ were pronounced correctly, about 25% were ambiguous and the rest was substituted by /w/; contrary to the majority of other speakers, the glide /w/ was only pronounced correctly in about 30% of grammatical words while the lexical words were correct in about 50% of cases. Aspiration was realized in about 25% of initial plosives, only about 15% of later plosives were aspirated and approximately 40% plosives were aspirated

after ‘s.’ /æ/ was ambiguous in about 10% of examined words, the rest was substituted by /a/ and /e/; /ɒ/ was pronounced as the Czech /o/. About 25% of syllables with schwa were correct, substitution by /e/ occurred in about 40% of words, /o/ was inserted in about 15% of cases, /a/ was also noted as well as /ou/ (*protesters*) and /er/ (*another*). Linking was corresponding in both grammatical and lexical words, i.e. about 50% of linked words. Approximately half of the examined words were assimilated. Similarly to PLDA, stress-wise, the longer the words, the better, although the difference were negligible and the stress-placement still presents problems to this speaker. Stress was placed on the first syllable in about 75% of two-syllabic words, about 70% of three-syllabic words, and about 65% in four and more-syllabic words.

5.11.j Speaker VLHA

While the pronunciation of /θ/ presented no problem at all, the voiced dental fricative was only pronounced correctly in about 20% of examined words, approximately 65% were substituted by /d/, about 10% by /t/, and about 5% by /s/. /v/ was completely correct in pronunciation, /w/ caused no problems in grammatical words, however, about 50% was substituted by /v/ in lexical words. While about 75% of initial plosives were aspirated, about 50% of later plosives were aspired. No aspiration accoutred after ‘s.’ /ɹ/ was pronounced correctly in about 65% in the initial and medial position, after a plosive even 75%. /ŋ/ was correctly pronounced in about half of the -ing forms, /k/ followed in approximately 50%, within morpheme mostly /ŋk/ occurred, alternating with /ŋg/. Schwa was pronounced correctly in about 40% examined words, about 20% were substituted by /e/ and /o/, about 5% by /a/. While the speaker performed and excellent placement of stress in the two-syllabic words and only about 30% of the first syllables were stressed in three-syllabic and four and more-syllabic words, assimilation and linking caused major problems. About 70% of grammatical words and 80% of lexical words were glottalized, and about 65% of examined words were assimilated.

6. General discussion

Results have shown that while some of the studied phenomena are highly individual, there are some issues that can be presupposed to be problematic. The first category includes mainly the approximant /ɹ/, which was substituted by the Czech trill only in speech of several individuals and mostly when placed after a plosive. The interchanging of consonants /v/ and /w/ seems to be rather individual as well and, in general, /w/ tends to be substituted by /v/ in lexical words rather than grammatical, which could be influenced by its more frequent occurrence in English texts. Another phenomenon that seems to be rather individual is the regressive assimilation of voicing which occurred in about 50% of examined words and not in the speech of all the speakers, however, it should be studied more deeply in future research as it is heavily influenced by linking or glottalization and not all of the accessed material distinguished between inserted pauses and mere glottalization.

Segmental phenomena that occurred in speech of almost all speakers in an automatic insertion of plosive /k/ after nasal /ŋ/, prevailingly when /ŋ/ is incorporated into morphemic structure; in -ing forms, /ŋ/ tends to be replaced by /ŋk/ or /n/. The behaviour of the voiced dental fricative /ð/ is dependant on the word type: while in lexical words it only tends to be replaced by the plosives /d/ and /t/ in about 35% of words, in grammatical words, /d/ absolutely prevails, which can be caused by a frequent coappearance of grammatical words in a sequence, making it difficult for the non-native speakers to pronounce it correctly. It has been also noted that the conjunction *with* tends to be pronounced with the voiceless counterpart /θ/ and plosive /t/, /s/ has only been noted in few cases. The voiceless interdental fricative /θ/, on the other hand, has a better success rate of the correct pronunciation, however, speakers have a greater tendency to substitute it by a greater variety of consonants, dependant on the phonetic context. The better success rate could have been caused by lack of words containing this consonant. From the segmental features, the biggest challenges seem to be presented by schwa and the vowels /æ/ and /ɒ/. The study has proved that the Czech speakers have a great tendency to substitute those segments that are close to some of the Czech vowels or consonants, by the most similar Czech counterparts. Schwa was most frequently substituted by /e/ and /o/, other reoccurring vowels were also /a/, /u/, /i/, /ei/, /o:/, /ou/ and er (supported by the written form of the words). It has also been noted, that schwa followed by /r/ in the suffix -er tends to be in an absolute majority if cases pronounced /ər/ as in the American English. The vowel /æ/ was in speech of almost all speakers evaluated as sounding completely non-native, being replaced either by /e/ or /a/. As the frequency of the substitution has not

been studied, I would like to dedicate future research to the study of in what phonetic context and how often /æ/ is substituted by /e/ and by /a/ and whether there is any predictability in this phenomenon. As had been predicted, also the vowel /ɒ/ was, due to its closeness to the Czech vowel /o/ replaced by its Czech counterpart in absolute majority of the examined words in speech of all speakers. Aspiration can be evaluated as problematic, however, it tends to cause confusion in two different ways: while some speakers do not use it at all, others tend to overuse it, in other words, once they learn to aspirate, they use it in even in places where it is not supposed to be. As the research only took the stressed syllables and voiceless plosives into consideration, I would like to propose future research that would also focus on aspiration in unstressed syllables and voiced plosives.

From the prosodic level, the hypothesis was proved correct that the most problematic phenomena would be linking and stress-placement. While the problematic places of the segmental features lie in their similarity between the two languages, the prosodic level, to the contrary, shows inadequacies in areas where the two languages differ the most. In all three categories of examined words- two, three, and four and more-syllabic words, the tendency to place stress on the first syllable reaches into 50% which confirms studies that had already been performed. Glottalization was found to be present in both grammatical and lexical words, even though grammatical words tend to be linked together in about 10% of cases more than the lexical one. The tendency to link grammatical words more than lexical words might be twofold: as grammatical words are, in general, shorter than the lexical ones, it might lead the speakers to connect them more easily; or it could be caused by simple convenience for glottalizing requires more effort and linking two short words is therefore more efficient. As the study lacks a section on intonation, in the future, I would like to add this phenomenon to complete the research on the prosodic level.

7. Conclusion

In this research, I engaged in examining Czech accent in English, what are the most problematic areas and in what relation they contribute individually to the non-native accent. This study was performed on the speech of ten Czech native speakers, examining twelve phenomena (nine segmental and three prosodic) that had been selected based on previous experience and presuppositions. The theoretical part introduced information about non-native accent, segmental and prosodic aspects of speech, socio-psychological aspects of foreign accent, it also presented some of the studies that have been so far performed on the topic of foreign accent in general and some of the studies engaged in particular features of Czech accent in English. Methodological section then introduced the process of selection the targeted features and their examination. The results have shown that while some of the phenomena are only problematic to some of the speakers and there cannot be seen any regularity (approximant /ɹ/, interchanging of /v/ and /w/, regressive assimilation of voicing), there are certain regularities in the other phenomena examined. These might be seen as problematic to the Czech speakers in general, and should be focused on while teaching English as a second language. The biggest problem was presented by pronunciation of vowels /æ/, /ɒ/ and schwa, consonants /ŋ/, /ð/ and /θ/, aspiration, on the suprasegmental level by linking and stress-placement. Future research will be performed in order to both specify the results of this study (e.g. relation between substitution of /æ/ by /e/ and /a/ and its phonetic context, defining pauses between evaluated words in order to specify the results of regressive assimilation of voicing), and to broaden its scope (e.g. intonation).

8. References

Boersma, Paul & Weenink, David (2018). Praat: doing phonetics by computer [Computer program]. Version 6.0.41, retrieved 6 August 2018 from http://www.praat.org/

Flege, J. E., (1999). Age of Learning and Second-language Speech., In D. Birdsong (Ed.) *Second Language Acquisition and the Critical Period Hypothesis.* Hillsdale, NJ: Lawrence Erlbaum, 101-132.

Gass, S. M., Mackey A. (2012). *The Routledge Handbook of Second Language Acquisition*. London, Routledge.

Gluszek, A., Dovidio, J. F. (2010). The Way They Speak: A Social Psychological Perspective on the Stigma of Nonnative Accents in Communication. *Personality and Social Psychology Review*. SAGE, 214-237.

Hansen Edwards, J. G., Zampini, M. L. (2008). *Phonology and Second Language Acquisition*. Philadelphia: J. Benjamins

Hanzlíková, D., Skarnitzl, R. (2017). Credibility of Native and Non-Native Speakers of English Revisited: Do Non-Native Listeners Feel the Same?. *Research in Language*, 15.3, 285-298.

Lenneberg, E. H., Chomsky, N., & Marx, O. (1967). Biological Foundation of Language. New York: John Wiley & Sons.

Major, R. C. (2001). Foreign Accent: *The Ontogeny and Phylogeny of Second Language Phonology*. NJ: Lawrence Erlbaum Associates.

Mennen I., de Leeuw, E. (2014). Beyond Segments: Prosody in SLA. *Studies in Second Language Acquisition*, 183-194.

R Core Team (2015). R: A language and environment for statistical computing (version 3.2.2) [Computer software]. R Foundation for Statistical Computing, Vienna. Retrieved from http://www.R-project.org/.

Šimáčková Š., Podlipský, V.J., Kolářová, K. (2014). Linking Versus Glottalization: (Dis)connectedness of Czech Accented English. *Concordia Working Papers in Applied Linguistics*, 678-692.

Volín, J. & Skarnitzl, R. (2010). The strength of foreign accent in Czech English under adverse listening conditions. Speech Communication, 52, 1010–1021.

Volín, J. & Skarnitzl, R. (Eds.) (2018). The Pronunciation of English by Speakers of Other Languages, 181-195 . Newcastle upon Tyne: Cambridge Scholars Publishing.

Volín, J., Poesová, K. & Weingartová, L. (2015). Speech melody properties in English, Czech and Czech English: Reference and interference. Research in Language, 13, 107–123.

Wickham, H. (2009). ggplot2: Elegant graphics for data analysis (use R!). New York, NY: Springer.

9. Resumé

Tato práce je zaměřená na výzkum fonetických aspektů silného českého přízvuku v angličtině a jejím cílem je zjistit, v jakém poměru jednotlivé aspekty přispívají k celkovému cizineckému přízvuku. Těmito jevy jsou, na segmentální úrovni, samohlásky /æ/, /ɒ/ a /ə/, souhlásky /ɹ/, /ð/, /θ/, /ŋ/, /v/, /w/ a aspirace explozív, na prozodické úrovni přízvuk ve dvou, tří, čtyř a víceslabičných slovech, spojování slov a regresivní asimilace znělosti.

V teoretické části (sekce 2-3) je nejprve detailně rozebrán cizinecký přízvuk, tedy realizace jazyka, která se zásadně liší od realizace rodilého mluvčího na segmentální i prozodické úrovni. Zatímco segmentální úrovní jsou myšleny konkrétní realizace samohlásek a souhlásek, tedy segmentů, prozodická úroveň (neboli suprasegmentální) zahrnuje takové jevy jako například spojování slov, umisťování přízvuku, intonaci, rytmus atp. Při té příležitosti jsou představeny některé ze studií, které se přízvukem zabývají (sekce 2.1.). V rámci této části jsou také uvedeny jednotlivé pohledy na to, jak věk ovlivňuje sílu přízvuku. Je obecně známo, že lidé, kteří se začínají druhý jazyk učit již v útlém věku mají později daleko menší přízvuk než ti, kteří se začínají učit až v pokročilejším věku. Touto problematikou se zabývají různé teorie, mezi nimi např. nejznámější teorie CPH (Critical Period Hypothesis), která byla ovšem jako první aplikována na osvojování si mateřského jazyka. Podle této teorie je totiž lidská schopnost ovlivněna biologicky změnami v mozku, a proto již po dosažení určitého věku není člověk schopný se jazyk naučit na úrovni rodilého mluvčího. Tato teorie je problematická především z toho důvodu, že lidský mozek funguje (v tomto ohledu) stejně u všech lidí bez výjimek a při tom jsou lidé, kteří i přes to, že se začali druhý jazyk učit později, mohou dosáhnout úrovně rodilého mluvčího. Sekce 2.2. provádí problematikou segmentů a prozodie, uvádí i další teorie, které se zabývají rozdíly, nebo naopak podobnostmi, mezi rodným a druhým jazykem (Best's *Perceptual Assimilation Model*, Kuhl's *Native Language Magnet Model*, Flege's *Speech Learning Model*). Tyto teorie rozebírají, zda je pro studenty složitější se naučit ty aspekty jazyka, které jsou naprosto odlišné od těch v jejich rodném jazyce, nebo zda je naopak těžší se naučit ty, mezi kterými je minimální rozdíl. Tato problematika se poté zrcadlí i v samotném výzkumu. Následně jsou rozebrány psychologické aspekty přízvuku, jelikož zásadní vliv na to, zda student má či nemá silný přízvuk mohou mít i takové aspekty jako například motivace, jazykový talent nebo i hudební sluch. V následující části, 2.3., je čtenář seznámen se socio-psychologickými aspekty přízvuku, konkrétně jeho dopadem na chování a předsudky, jelikož je několika studiemi prokázáno, že na straně posluchačů (a to nejen rodilých mluvčích) dochází velmi často

k diskriminaci právě na základě cizineckého přízvuku (např. hodnocení výpovědi jako méně pravděpodobné až nepravdivé).

Třetí sekce teoretické části se již zabývá konkrétními rozdíly mezi češtinou a angličtinou, v sekci 3.1. jsou představeny některé ze segmentálních aspektů, ať už ty, které působí problém jejich jedinečností v daném jazyce nebo právě jejich relativní podobou. Mezi tyto segmenty patří souhlásky i samohlásky, například samohlásky /æ/ a /ɒ/ jsou ve výslovnosti velmi podobné českým samohláskám /e/, /a/ a /o/. Ze samohlásek lze jmenovat například dentální frikativy /ð/ a /θ/, které jsou v angličtině, oproti češtině, naprosto ojedinělé a v nemají v českém jazyce žádný protějšek, na druhou stranu ovšem některým mluvčím mohou znít natolik podobné českým souhláskám /d/, /t/, /s/ nebo /f/, že se v řeči mohou často zaměňovat. I z tohoto důvodu byly právě tyto segmenty zařazeny do výzkumu. Následující část, 3.2., uvádí problematiku prosodických jevů v „české angličtině“, jelikož zatímco na segmentální úrovni se dá najít mnoho podobností, na prozodické úrovni se oba jazyky velmi liší. Například zatímco angličtina naprostou většinu slov váže a slova glotalizuje pouze za účelem emfáze, čeština naopak oddělování slov doporučuje za účelem srozumitelnosti a v některých kontextech je dokonce oddělování povinné. Také umisťování přízvuku se naprosto liší- zatímco v češtině se vždy umisťuje na první slabiku, v angličtině je nepředvídatelný a pohyblivý (např. při připojení sufixu se může přízvuk ve slově posunout na úplně jinou slabiku atp.).

Metodologie, část 4.-4.2., provádí procesem výběru mluvčích i jednotlivých zkoumaných jevů, důvody a způsobem výběru a jednotlivými požadavky naplnění zkoumaných skutečností. Sekce 4.2. pak detailně seznamuje se způsobem analýzy pomocí poslechu v programu Praat a zpracováním výsledků pomocí Excelu a programu R.

Sekce 5., výsledky a diskuse, uvádí jednotlivé výsledky. Postupuje od prozodie k segmentům a pomocí grafů seznamuje čtenáře s procentuálním přispěním jednotlivých zkoumaných jevů k celkovému přízvuku (sekce 5.1-5.10.). Všechny části obsahují nejprve obecné výsledky a následně náhled na jednotlivé mluvčí, kromě odstavců 5.2. Linking, 5.5. /v/, /w/ a 5.9. /æ/, /ɒ/, které celkové výsledky prezentují přímo v rámci grafu jednotlivých mluvčích. Sekce 5.11. uvádí výsledky pro jednotlivé mluvčí a vždy se postupuje od jevů, které danému mluvčímu působily nejmenší problém, k těm, ve kterých chyboval nejvíce.

Následující sekce, 6., shrnuje výsledky a rozděluje je na ty, které působí problémy pouze individuálně, a které se nedají považovat za celkově problematické, a ve kterých se chybovalo opakovaně v řeči většiny nebo dokonce všech mluvčích. Výzkum prokázal, že zatímco asimilace znělosti, zaměňování souhlásek /v/ a /w/, vyslovování anglického /ɹ/ jako

českého /r/ a asimilace znělosti jsou povětšinou jevy, které působí problémy spíše jednotlivcům. Většině anebo dokonce všem deseti mluvčím dělala problém výslovnost dentálních frikativy /ð/, neznělé /θ/ sice dopadlo ve výslovnosti o něco lépe, to ale může být způsobeno nedostatkem slov obsahující tuto souhlásku. Problematická byla také výslovnost nazály /ŋ/, která byla v naprosté většině případů doprovázená explozivou /k/. Samohlásky /æ/ /ɒ/, /ə/ jsou v naprosté většině slov nahrazovány českými samohláskami. Také aspirace se ukázala jako problematická, zatímco někteří mluvčí ji nepraktikují vůbec v žádném kontextu, jiní mají tendenci k nadměrnému užívání. V budoucnu bych tento aspekt ráda studovala více a zjistila, zda se dá v tomto jevu najít regularita (např. zaměřit se také na explozívy v nepřízvučných slabikách nebo na znělé explozívy). Na prozodické úrovni působilo, podle očekáván, největší problém spojování slov a umisťování přízvuku na první slabiku. Tyto jevy by se tedy daly považovat za nejvíce problematické a při vyučování angličtiny jako druhého jazyka by se na ně měl klást zvláštní důraz. Sekce obsahuje i stručné informace o tom, kam by měl výzkum v budoucnosti směřovat. V průběhu výzkumu byly zjištěny nedostatky, které budou v dalším zkoumání napraveny a detailněji tak doplní celkové výsledky (např. zda existuje souvislost mezi nahrazováním anglického /æ/ českým /e/ a /a/ a jejich fonetickým okolím, definování pauz a glotalizace a jejich souvislost s regresivní asimilací znělosti atd.). Z prozodických aspektů by k výzkumu měla být v budoucnu dodána také intonace.