

UNIVERZITA PALACKÉHO V OLOMOUCI

Filozofická fakulta

Katedra anglistiky a amerikanistiky

CZECH LEARNERS' IMPLICIT KNOWLEDGE OF
ENGLISH PRONUNCIATION

Bakalářská práce

Autor:

Adam Král

Vedoucí práce:

Mgr. Václav Jonáš Podlipský, Ph.D.

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Prohlašuji, že jsem tuto bakalářskou práci vypracoval samostatně a uvedl úplný seznam citované a použité literatury.

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1 Introduction

The aim of the present thesis is to compare pronunciation of English and Czech in terms of phonemic and allophonic differences and make a research proposal investigating what future students of English at a university level know about pronunciation of English. The author focuses mainly on Received Pronunciation and Standard Czech. The sample questionnaire is designed, asking the respondents about differences in pronunciation of similar English and Czech words. The present thesis focuses on differences in pronouncing separate words. The suprasegmental features of speech including stress and intonation are not examined.

The first chapter deals with differences between English and Czech at a phonemic level. First, vowels and consonants are described in general. The author describes the way they are produced and divides them into corresponding groups. Other sections focus on the phonemic inventories of both languages, including example words containing each phoneme.

The *Allophonic processes of English and Czech* chapter represents a fundamental part of the present thesis. It provides a list of English and Czech allophonic processes that are relevant for the purpose of the present thesis. The differences and similarities are discussed, with emphasis on voicing of consonants in both languages. Allophonic processes concerning vowels are not discussed as deeply as those concerning consonants. The reason for this is that Czech vowels do not get much influenced by the surrounding allophones, as Palková (1994, 170) claims. On the other hand, English vowels seem to have a different tendency – their length is often an essential element that can distinguish meanings of words. However, they still do not get as influenced by their surroundings as consonants.

The final chapter of the present thesis focuses on a phenomenon that is referred to as second language pronunciation acquisition. The author of the present thesis sums up the theory of this subject and then presents a few ideas based on research done by American phonetician James Emil Flege. The next part of the chapter serves as a research proposal. The purpose of the research is to find out what knowledge Czech fourth year high school students who plan to study English at a university have about English pronunciation. The sample questionnaire is introduced, consisting of two parts – open questions and the practical part. First, students are asked about their previous studies of English, methods that they use to learn pronunciation and finally, they are

asked to present their ideas about differences in pronunciation of English and Czech. In the second part, the respondents' task is to read aloud pairs of similar English–Czech words and think about sounds in which they differ. The present questionnaire is first focused on differences in consonantal sounds, then vowel sounds and the last part deals with differences in pronunciation within English, only. The next part of the chapter provides author's presumptions in a form of a hierarchy of differences to be mentioned by the respondents according to probability. In the final part of the chapter, three respondents that participated in the sample research are introduced with an analysis of some of their answers.

The software *Praat* (Paul Boersma and David Weenink) was used to draw waveforms and spectrograms of the analysed sound recordings. All the recordings that were used for the purpose of the present thesis are attached on the CD, in folder *-sound files*. Abbreviations used are VOT (Voice Onset Time), IPA (International Phonetic Alphabet), L1 (native language) and L2 (second language).

2 Phonemic differences between English and Czech

Considering origin of the two languages, English and Czech, the fact that they belong to different language groups must be kept in mind. While English is a Germanic language, Czech belongs to Slavic languages. When it comes to comparing sounds of these two languages, it is obvious that they are different in many ways but still have a lot in common. This chapter describes vowels and consonants in general, sorts them according to how they are produced and provides phonemic inventories of both languages. It is important to describe phonemic inventories of both languages since the respondents of the present questionnaire are asked to distinguish different phonemes occurring in English and Czech.

2.1 Vowels in general

Vowel sounds are made relatively without any obstruction in the oral cavity. Cruttenden states three factors playing the main role in producing a vowel sound:

The position of the **soft palate** – raised for oral vowels, lowered for nasalized vowels,

The kind of aperture formed by the lips – degrees of spreading or rounding,

The part of tongue which is raised and the degree of raising. (Cruttenden 2001, 33)

There are **high** and **low** (Ladefoged and Johnson 2011) which is the same as close and open (Cruttenden 2001), then there are **front** and **back**, **central**, **rounded** and **unrounded** or **tense** and **lax** vowels. *Figure 1* shows the auditory vowel space within which the sounds are produced. This diagram applies for English vowels only since /æ/ and /ɑ/ sounds do not occur in Czech at all.

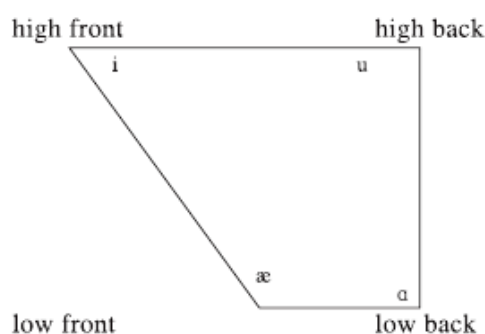


Figure 1: Auditory vowel space¹

2.1.1 English vowels

There are 8 cardinal vowels in the English vowel diagram – /i, e, ε, a, ɑ, ɔ, o, u/ (Cruttenden 2001, 35). The first four of these vowels are front unrounded vowels. This means that the highest point of the tongue is in the front part of the oral cavity while producing these vowel sounds. The other four vowels in this list are back rounded vowels except for the /ɑ/ vowel. This vowel is unrounded as well as /i/, /e/, /ε/ and /a/. All the cardinal vowels together form the shape of the vowel diagram. Not all of them are used as single vowels in Received Pronunciation, though. Vowel /e/, for example, is only used in diphthongs /eɪ/ and /eə/.²

English language has twelve vowels occurring as single vowels. Four of them are in each corner of the vowel diagram. These are /i/, /u/, /æ/ and /ɑ/. Example words containing these vowels are shown in (1), respectively. As for the front vowels, there are another two – /ɪ/ and /ε/ pronounced in words in (2). The remaining three back vowels are /ʊ/, /ɔ/ and /ɒ/ in words in (3). Three vowels are classified as central vowels – /ə/, /ɜ/ and /ʌ/ pronounced in words in (4). Vowel /ə/ occurs in unaccented syllables only (Cruttenden 2001, 93). *Figure 2* shows the English vowel chart.

- (1) *meat, food, hat, mark*
- (2) *bit, led*
- (3) *foot, bought, cod*

¹ Figure 1 was borrowed from Ladefoged and Johnson (2011, 88).

² More on this topic in 2.2.1

(4) *about*³, *bird*, *mud*

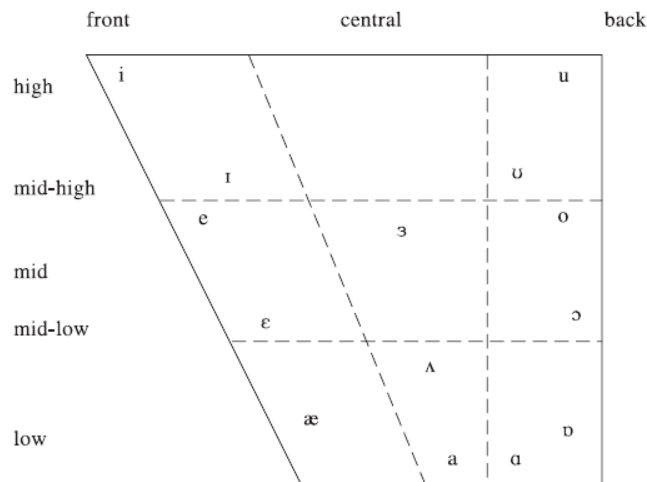


Figure 2: English vowel chart⁴

This is the basic characteristics of English vowels. Section Allophonic processes of vowels in chapter 3 talks about circumstances under which vowels change their acoustic properties.

2.1.2 Czech vowels

Standard Czech has fewer vowels than English. The Czech language has only 6 basic vowels but some of them have their long variations at the same time. These variations differ from the basic vowels by their length only, their quality is the same. The front vowels are following, in order from high to low: /i:/, /ɪ/, /ɛ/ and its long variation /ɛ:/. Example words in (5) contain these vowels, respectively. The low central vowel /a/ has its long variation /a:/ and each of the two back vowels also has two versions – /u/ and /u:/ and /o/ and /o:/. The example words are shown in (6).

(5) *mít*, *byt*, *m* , *lék*

(6) *kat*, *pták*, *kult*, *k l*, *tok*, *pól*

In Standard Czech, the phoneme /o:/ occurs in borrowed words only. The only case of original Czech words where this phoneme is used is when a speaker lengthens the regular /o/ in some words, expressing emotion (Palková 1994, 196).

³ /ə'baʊt/

⁴ Figure 2 was borrowed from Ladefoged and Johnson (2011, 44).

Palková claims that Czech vowels are **always pronounced fully**, their position in spoken Czech is stable and they do not get much influenced by surrounding consonants (1994, 170). *Figure 3* shows Czech vowels and their basic characteristics.

Tongue position	front	center	back
high	[i:], [ɪ]		[u], [u:]
mid-high/mid-low		[ɛ:], [ɛ]	[o], [o:]
low		[a], [a:]	
Lip-rounding	unrounded		rounded

*Figure 3: Vowel chart of Standard Czech*⁵

2.2 Diphthongs in general

Diphthongs also represent an important part of the phonemic systems of both languages. Diphthongs can be described as “movements from one vowel to another within a single syllable” (Ladefoged and Johnson 2011, 39). Diphthongs are divided either by **direction of the movement** between the two vowels or **comparison of sonority** of those two vowels.

The first criterion includes three categories of diphthongs. These are closing, centering and opening diphthongs. Contrary to an opening diphthong, the second vowel of a closing diphthong is more close (higher) than the first one. The second vowel of a centering diphthong is more central than the first, peripheral, vowel. Opening diphthongs do not occur in English, nor do they in Czech.

The other criterion deals with sonority of both parts of a diphthong. Thus, diphthongs are divided into two categories – falling and rising. The first vowel sound in a falling diphthong is more sonorous than the other. Phoneticians often use the non-syllabic diacritic symbol to indicate the less sonorous (less prominent) part of a diphthong as shown in (7).

(7) *boy* [ˈbɔɹ̩]

⁵ Figure 3 was borrowed from Palková (1994, 171).

2.2.1 English diphthongs

The quality of vowels as part of English diphthongs is different from the Czech. While vowels in Czech diphthongs are pronounced fully and quite the same as simple vowels, Ladefoged and Johnson say that

in English, the first part of a diphthong is usually more prominent than the last. In fact, the last part is often so brief and transitory that it is difficult to determine its exact quality. Furthermore, the diphthongs often do not begin and end with any of the sounds that occur in simple vowels. (Ladefoged and Johnson 2011, 92)

The second vowel sound is often very weak and many phoneticians prefer to transcribe it as a superscript letter as seen in (8) (Ladefoged and Johnson 2011, 92).

Same as the single vowels, English has more diphthongs than Czech. Received Pronunciation English contains the following nine diphthongs – /ɪə/, /eə/, /ʊə/, /aɪ/, /eɪ/, /ɔɪ/, /əʊ/, /aʊ/ and /ju/ pronounced in example words in (9), respectively. They are all falling diphthongs except for one and that is the diphthong /ju/ (Ladefoged and Johnson 2011, 92-93).

(8) *same* ['se^ɪm]⁶

(9) *here, there, pure, line, plane, boy, show, how, cute*

2.2.2 Czech diphthongs

Only three diphthongs occur in the Czech language. These are /ou/, /au/ and /eu/, pronounced in words in (10). Except for cases including obvious morphological boundary such as space, comma, full stop and other, whenever the /o/ and /u/ or /a/ and /u/ sounds occur side by side in Czech, they form a diphthong. The sequence of /e/ and /u/ might be pronounced as a diphthong or as separate vowels depending on the speaker's conviction. Diphthong /ou/ is the only diphthong that is used in original Czech words. Other two diphthongs /au/ and /eu/ are used in borrowed words only (Palková 1994, 172).

(10) *kout, auto⁷, euforie⁸*

⁶ More on this type of transcription (square brackets) in chapter 3

⁷ /'auto/

⁸ /'euforije/

2.3 Consonants in general

This section characterizes consonants in general, i.e. how they are produced. The specific phonemes of English and Czech including examples are described in sections 2.3.5 and 2.3.6.

A consonant is a speech sound produced by an obstructed air flow in the oral cavity. Four factors play the main role in producing a consonant sound – **place** of articulation, **manner** of articulation, position of the **soft palate** and movement of **vocal cords**.

2.3.1 Place of articulation

First, consonants are divided according to where in the oral cavity the obstruction is made. The oral cavity can be divided into three parts and thus three categories of place of articulation – labial (with the lips as the articulators), coronal (with the tip or blade of the tongue as the articulator) and dorsal (with the back of the tongue or glottis as the articulator) articulation.

These categories are then divided into more specific following groups:

1) **Labial** part consists of two specific places of articulation.

- a) **Bilabial** sounds are produced with the two lips coming together.
- b) **Labiodental** sounds are made by the lower lip touching the upper front teeth.

2) **Coronal** part includes four places of articulation.

- a) **Dental** sounds are created with the tip or blade of the tongue slightly touching the upper front teeth.
- b) **Alveolar** consonants are made with the tip or blade of the tongue touching the alveolar ridge.⁹
- c) **Post-Alveolar (Palato-Alveolar)** consonants are created with the blade of the tongue touching the back of the alveolar ridge.

3) **Dorsal** part consists of three places of articulation.

- a) **Palatal** sounds are created with the front of the tongue touching the hard palate.
- b) **Velar** sounds are produced with the back of the tongue touching the soft palate (velum).

⁹ Alveolar ridge is gum right behind the upper front teeth.

- c) **Glottal** consonants are articulated with the glottis (vocal cords and the space between them).

2.3.2 Manner of articulation

Consonants are also divided in terms of how the friction is created. There is a number of differences in how the cavity is shaped. According to Ladefoged and Johnson (2011, 14-15), there are following manners of articulation:

- 1) **Stops** are consonants that are articulated by complete closure of the articulators. Possible kinds of closure can be bilabial, alveolar and velar. There are two categories of stops according to which cavity is involved in producing the sound.
 - a) **Oral** stops are produced with raised soft palate that blocks the nasal tract. The air goes through the oral cavity only and after the articulators come apart, the small burst of sound coming from the mouth follows.
 - b) **Nasal** stops are produced with lowered soft palate. The air goes out through the nose. Many phoneticians tend to use just the term nasal when talking about these sounds. The term stop is used mainly for oral stops.
- 2) **Fricatives** are typical for the narrowing of the vocal cavity that is used to make these sounds. The airstream is partially obstructed.
- 3) **Affricates** are constructions of stops, usually alveolar and fricatives.
- 4) **Approximants** are made by an articulator approaching the other but without narrowing the vocal cavity. A special kind of approximants are lateral approximants that are produced with the tongue making the obstruction but at the same time the air goes freely around both sides of the tongue.
- 5) **Trills** are sounds produced with vibration of one articulator towards the other, e.g. the airstream causing the tip of the tongue to move quickly towards the alveolar ridge.

2.3.3 Position of the soft palate

Some consonants need the nasal cavity to be produced – they are called nasals. When producing these sounds, the velum is lowered, the obstruction is made in the mouth and the air goes out through the nose (Ladefoged and Johnson 2011, 13).

2.3.4 Movement of vocal cords

When producing a sound, vocal cords either vibrate or stay still. In the first case, the sound that is produced is voiced. Voiceless sounds are made with no vibration of vocal cords in the larynx.

2.3.5 English consonants

To summarize consonantal sounds that appear in English, *Figure 4* shows them, sorted by place and manner of articulation. For each place of articulation, the example words containing each consonant as a word-initial sound from the specific category are given, respectively from left to right.

	Stops		Fricatives	Affricates	Approximants
	Oral	Nasal			
Bilabial (11)	/p/, /b/	/m/			(/w/)
Labiodental (12)			/f/, /v/		
Dental (13)			/θ/, /ð/		
Alveolar (14)	/t/, /d/	/n/	/s/, /z/		/l/
Post-alveolar (15)			/ʃ/, /ʒ/	/tʃ/, /dʒ/	/r/
Palatal (16)					/j/
Velar (17)	/k/, /g/	/ŋ/			/w/
Glottal (18)			/h/		

*Figure 4: Consonant chart of English*¹⁰

- (11) *pot, back, man*
- (12) *film, vest*
- (13) *thing, this*
- (14) *top, dock, nose, sick, zipper, lake*
- (15) *ship, genre, chop, jubilee, rest*
- (16) *yawn*
- (17) *kick, gum, bank*¹¹, *wait*
- (18) *hotel*

¹⁰ Figure 3 was borrowed from Cruttenden (2001, 149).

¹¹ /'bæŋk/

Phoneme /w/ is articulated at two places in the oral cavity at the same time – with the approximation of lips as one articulation and of the back of the tongue and velum as the other (Cruttenden 2001, 214).

Specific kind of consonantal sounds are the dental fricatives /θ/ and /ð/ which do not occur in Czech, at all. Although these phonemes are very frequent in English and therefore they should be paid attention to (Cruttenden 2001, 300), foreign learners find difficulties pronouncing these sounds. They quite often tend to replace them with /f/ and /d/ or /s/ and /dz/, respectively.

English rhotic approximant /ɹ/ is not very common in world languages (Ladefoged and Johnson 2011, 175). Foreign speakers of English tend to replace this phoneme for the alveolar trill /r/ that occurs in Czech, as well.

Glottal stop which is not phonemically distinctive in Received Pronunciation is not included in the chart (Cruttenden 2001, 150).

2.3.6 Czech consonants

Figure 5 provides phonemic inventory of Czech consonants, sorted by place and manner of articulation. Example words are provided for each phoneme according to manner of articulation – bilabial (19), labiodental (20), alveolar (21), post-alveolar (22), palatal (23), velar (24) and glottal (25).

	Stops		Fricatives	Affricates	Approximants	Trills
	Oral	Nasal				
Bilabial	/p/, /b/	/m/				
Labiodental			/f/, /v/			
Alveolar	/t/, /d/	/n/	/s/, /z/	/ts/	/l/	/r/, /r̄/
Post-alveolar			/ʃ/, /ʒ/	/tʃ/, /dʒ/		
Palatal	/c/, /j/	/ɲ/			/j/	
Velar	/k/, /g/	/ŋ/	/x/			
Glottal			/ɦ/			

Figure 5: Czech consonant chart¹²

(19) *p l, bok, med*

(20) *finance, víno*

¹² Figure 5 was borrowed from Palková (1994, 209).

(21) *tok, den, noc, syn, zjistit, cyp i-, list, r st, eka*

(22) *-achy, flok, idlo, dflíp*

(23) *t lo, d kovat, n co, jáma*

(24) *kat, guma, banka¹³, chata*

(25) *hokej*

Phoneme /ts/ can be pronounced as voiced in certain surroundings and therefore transcribed [ɽ]. Phoneme /x/ can undergo a similar process and become voiced [ɣ].

Figure 5 shows that Czech has more palatal consonants and a special group called trills. Trills are produced with the tip of the tongue vibrating towards the alveolar ridge. While /r/ is a sonorant, there is less air escaping the oral cavity when pronouncing /r̄/ and therefore this consonant is classified as an obstruent (Palková 1994, 212).

As for the voiced glottal fricative /ɦ/, it differs from the English /h/ in voicing. In English, the voiced version is usually used in between two vowels only.

¹³ /'ban̩ka/

3 Allophonic processes of English and Czech

3.1 Introduction

To introduce this chapter, it is important to specify what an **allophone** and an **allophonic process** are. The sounds that are transcribed in slashes (phonemic transcription) are called phonemes. Each phoneme has two or more realizations of itself called allophones. For example, the phoneme /l/ has allophones [l], [ɫ] and many others. The most commonly used is “clear l” that contains no special symbol and is transcribed as [l]. To sum up, allophone is an **actual version** of a phoneme that has an exact sound representation and is transcribed in square brackets unlike phonemes that are transcribed in slashes.

Considering these statements, the quality of allophone [ɫ] should always be the same in every word under any circumstances. But a more detailed interpretation denies this. Cruttenden (2001, 44) says: “No two realizations of a phoneme are the same. This is true even when the same word is repeated.” This quote is somewhat extreme but more scientific version of saying that there are several allophones for each phoneme. Cruttenden (2001) claims that **no** two sounds that we produce are the same. But since these differences are so small and, in fact, unidentifiable by a human ear, they are not included in the transcription, neither phonemic nor phonetic. There is a number of phonetically similar sounds between two languages (English and Czech in this case) that are transcribed with the same IPA symbol even in the allophonic transcription (Flege 1981, 446). An example could be vowel sound /u/ whose quality slightly differs in English and Czech.

There are many special symbols (diacritics) used for determining different nature of an allophone according to the specific allophonic process.

Allophonic process means behaviour of a specific allophone influenced by its surroundings. Allophonic processes can be described as the rules under which each allophone is distributed. As an example, one of the most common allophonic processes in English is aspiration of voiceless stops.¹⁴

The nature of an allophone is influenced in many ways. It is important where in a word that particular allophone occurs (whether at the beginning, in the middle or at the end of the word), in which part of a syllable it appears, if it is stressed and so on.

¹⁴ More on this topic in section 3.2.4

The following sections show basic classification of allophonic processes in a language as introduced by Palková (1994, 143-144).

3.1.1 Position of an allophone

The first criterion is the position of an allophone – it may be influenced either by the **neighbouring allophones** or its **position within a word** (Palková 1994, 143). An example of the first variant is assimilation of voicing in Czech and the second variant might be represented by loss of voicing at the end of Czech words.¹⁵

3.1.2 Assimilation and dissimilation

Allophonic processes can also be divided into two groups, according to whether the allophonic process causes the sound to be similar (**assimilation**) or contrary (**dissimilation**) to the surroundings (Palková 1994, 144). Assimilation is much more common in both Czech and English.

3.1.3 Total and partial assimilation

Assimilation can be either **total** or **partial**. Total assimilation happens when the specific phoneme adopts the quality of the neighbouring sound and becomes identical. An example of such process is shown in (26) where the phoneme /d/ totally assimilates to /t/ and becomes [t]. Partial assimilation happens when there is still some difference between the two neighbouring allophones after the allophonic process takes place (Palková 1994, 144). Example (27) shows that the phoneme /d/ partially assimilates to /k/ and becomes voiceless allophone [t].

(26) *odtah* ['ottax]

(27) *podklad* ['potklat]

3.1.4 The direction of assimilation

The “direction” of the particular assimilation is either left-to-right or right-to-left.

Progressive assimilation means that the first of the two sounds influences the following sound and causes it to change (Palková 1994, 144). This type of assimilation takes place when creating plural forms of most of English nouns or in various voicing changes in Czech, for example.

¹⁵ More on this topic in section 3.2.1

Regressive assimilation means that the second sound affects the preceding sound (Palková 1994, 144). In English, this kind of assimilation occurs when dealing with length of vowels, for example, where the following consonant determines the length of the preceding vowel.¹⁶ Regressive assimilation in Czech words is much more common than progressive assimilation. This topic is described in detail in section 3.2.1.

The next part of the chapter deals with the description of English and Czech allophonic processes that happen in each of these two languages. Typical allophonic processes that occur in these languages will be described.

3.2 Allophonic processes of consonants

Ladefoged and Johnson describe assimilation as a process within which “one sound is changed into another because of the influence of a neighboring sound” (2011, 111). In other words, the sound that assimilates to the following sound adopts its features in some way.

Basic classification of assimilation from the general point of view is described in 3.1. The following types of assimilation concerning specific sound changes are assimilation of **voicing**, assimilation of **place of articulation** and assimilation of **manner of articulation**.

3.2.1 Assimilation of voicing

Assimilation of voicing means that a voiceless sound changes into a voiced sound or vice versa in order to assimilate to a neighbouring sound so that the whole sound segment is voiced or voiceless (Palková 1994, 145).

This phenomenon occurs when creating the **regular plural forms** of English nouns. When the last sound in the single form of a noun is a sibilant (/s/, /z/, /ʃ/, /ʒ/, /ʒ/ or /dʒ/), the plural suffix is pronounced as /ɪz/. When the base ends in a voiced sound other than sibilant, the /z/ is pronounced. When a noun ends in a voiceless sound except for a sibilant, the /s/ is pronounced (Quirk et al. 1985, 304). The exception, though, occurs when a noun ends in *olf*. In this case, as shown in (28), the phoneme /f/ changes into its voiced representation [v] and therefore the plural suffix is pronounced as /z/.

(28) *calf* /'kʰɑf/, *calves* ['kʰɑvz]

¹⁶ More on this topic in section 3.3.2

The same rules as described in the previous paragraph apply to **third person forms** of verbs, pronouncing the suffix either /ɪz/, /z/ or /s/ (Quirk et al. 1985, 99).

The suffix *-ed* at the end of the **past forms** of English verbs also has three different pronunciations – /ɪd/, /d/ and /t/. As shown in (29), when the base ends in /d/ or /t/, the suffix *-ed* is pronounced as /ɪd/. The final sound /d/ is attached to verbs ending in voiced sounds other than /d/ as in (30). The examples in (31) show the use of /t/ as the final consonant. This ending is pronounced when the base of a verb ends in a voiceless sound except for /t/ (Quirk et al. 1985, 100).

(29) *needed* ['niːɪd], *wanted* ['wɒntɪd]

(30) *sailed* ['seɪɪd], *prayed* ['preɪɪd]

(31) *passed* ['pʰɑːst], *kicked* ['kɪkɪt]

Devoicing, at least partial, in English also occurs when an initial **aspirated stop** is followed by an **approximant** (Ladefoged and Johnson 2011, 73). Cruttenden claims that aspiration causes the approximant, that is /l/, /r/, /w/ or /j/, to become voiceless (2001, 151). Example in (32) shows that phoneme /l/ gets devoiced and the voicelessness is illustrated with a small circle under the letter *l*.

(32) *please* ['pliːz]

A distinct feature of Czech pronunciation is devoicing at the **end of words**. Czech learners of English usually incorrectly pronounce final sounds of English words as voiceless because this allophonic process takes place in Czech. All Czech consonants that have their voiceless versions change their quality to a voiceless consonant when at the end of a word. *Figure 6* shows all the Czech consonants (classified by manner of articulation) that have their voiceless versions. Example words containing voiced sounds from *Figure 6* as word-final are provided, respectively.

	Voiced version	Voiceless version
Stops (33)	/b/	/p/
	/d/	/t/
	/ʒ/	/c/
	/g/	/k/
Fricatives (34)	/v/	/f/
	/z/	/s/
	/ʒ/	/ʃ/
	/ɦ/	/x/
Affricates ¹⁷	/dʒ/	/tʃ/
	/dʒ/	/tʃ/
Trills (35)	/r̥/	/r̥̊/

Figure 6: Czech voiced-voiceless consonant pairs¹⁸

(33) *sob* ['sop], *plod* ['plot], *lo* ['loc], *mág* ['ma:k]

(34) *lov* ['lof], *kaz* ['kas], *pláfl* ['pla:f], *stoh* ['stox]

(35) *o* ['oř]

A distinctive Czech voiced-voiceless pair is /fi/ and /x/. They both are fricatives but unlike other pairs, each of these phonemes has a different place of articulation (see *Figure 5*). Czech approximants, nasals and trill /r/ do not have their voiceless variations, they are always voiced (Hůrková 1995, 27).

The assimilation of voicing in the **middle** or at the **beginning** of words takes place when either first or second phoneme is voiced and the other voiceless. When the first sound is voiceless and the other voiced, regressive assimilation usually takes place. The voiced phoneme changes the quality of the voiceless one and the whole sound segment becomes voiced. Examples of this assimilation are shown in (36). When the first sound is voiced and the other voiceless, regressive assimilation takes place again. The voiceless consonant changes the voiced one to voiceless as in (37).

(36) *sbalit* ['zbalit], *kdy* ['gdɪ]

(37) *tufka* ['tu]ka], *obchod* ['opxot]

¹⁷ Czech voiced affricates do not appear at word-final positions.

¹⁸ Figure 6 was borrowed from Hůrková (1995, 27).

A unique Czech phoneme /r̥/ gets devoiced when at the **end** of a word or when **followed** or **preceded** by a voiceless consonant (Hůrková 1995, 27). Example words containing sequence of /r̥/ and a voiceless consonant are shown in (38).

(38) *t út* [ˈt̥ɪt̥], *bou ka* [ˈbou̯ka]

Except for the cases that have been mentioned before, change of voicing within a word in English does not usually happen, though some cases of such allophonic change occur, especially in **compounds** as shown in (39).

(39) *newspaper* [ˈnjuːspeɪpə]

3.2.2 Assimilation of place of articulation

When a sound, usually the first one in the sequence, assimilates its place of articulation to the other, the process is called assimilation of place of articulation.

In Czech, this phenomenon can appear in example word in (40) where /s/ is pronounced as [ʃ].

(40) *z erstva* [ˈst̥ʃerstva] or [ˈʃʃerstva]¹⁹

In English, this kind of assimilation can be spotted in words with **dental** sounds. In this case, alveolar consonants change their place of articulation to dental when before a dental consonant. Examples in (41) show that the alveolar consonants assimilate to /θ/ and become dental. This dentalization is marked with the diacritics under the specific letter representing the dentalized allophonic representation of a phoneme (Ladefoged and Johnson 2011, 75).

(41) *eighth* [ˈeɪt̪θ], *tenth* [ˈt̪ɛnt̪θ], *health* [ˈhɛt̪θ]²⁰

The specific assimilation of place of articulation that English and Czech have in common is pronouncing /ŋ/ instead of /n/ before velar stops /k/ and /g/. Czech words that include this kind of assimilation are both original Czech words as well as loanwords, as shown in (42) (Hůrková 1995, 30). Examples of English words are provided in (43).

¹⁹ Example in (40) was borrowed from Hůrková (1995, 31).

²⁰ Examples in (41) were borrowed from Ladefoged and Johnson (2011, 75).

(42) *branka* ['brɑŋka], *Anglie* ['aŋglɪ'ɛ]

(43) *uncover* ['ʌŋkʰʌvə], *England* ['ɪŋglənd]

3.2.3 Assimilation of manner of articulation

Assimilation of manner of articulation appears mostly in casual running speech and thus it is not significant for the purpose of the present thesis. An example Czech word is shown in (44) where nasal stop /n/ adjusts the manner of articulation of /s/.

(44) *slovenský* ['slovenski:] or ['slovenski:]²¹

3.2.4 Aspiration of voiceless stops

A distinctive allophonic process of English is aspiration of voiceless stops that does not take place in Czech. The idea is that the release of a voiceless stop is followed by audible plosion, a small **burst of noise**. After this, the post-release phase follows. During this period, the air escapes through the vocal cords and makes audible /h/ sound which is called **aspiration**. Then the voicing of a following sound begins with vocal cords coming together (Roach 1991, 32). Voiceless stops /p/, /t/ and /k/ become aspirated when they are stressed and syllable initial. They can be aspirated when occurring before most of vowel sounds as well as some consonant sounds – the approximants, as described in section 3.2.1. The diacritical mark used for aspiration is the superscript *h*, thus, when the phoneme /p/ becomes aspirated, it is transcribed as [p^h]. Aspiration is common in the majority of English varieties and it characterizes the sound of English. In General American, speakers tend to minimize the aspiration or even leave the voiceless stops unaspirated, though.

When a voiceless stop is preceded by the phoneme /s/, it is not aspirated. Examples in (45) show the contrast between aspirated and unaspirated consonant /p/.

(45) *pie* ['p^haɪ], *spy* ['spaɪ]

The so-called “**voice onset time**” (VOT) plays an essential role in pronouncing stop consonants and describing aspiration of these sounds. Cruttenden claims that VOT is the period of time that passes between the release of a stop and the onset of voicing (2001, 152). VOT is usually measured in milliseconds. Ladefoged and Johnson describe three different lengths of VOT (2011, 151):

²¹ Example in (44) was borrowed from Palková (1994, 146).

- 1) **Fully voiced stops** have their VOT negative (less than zero) because the vocal cords start to vibrate before the actual release of the stop.
- 2) **Unaspirated voiceless stops** have their VOT neutral. The reason for this is that the voicing of a following vowel sound starts right after the release of the stop.
- 3) **Aspirated voiceless stops** have their VOT long. The longer the VOT is, the longer the aspiration is. VOT values for aspirated voiceless stops generally range from 40 to 75 ms, depending on the speaker and the neighbouring sounds (Cruttenden 2001, 152).

Since there is no aspiration in Czech, it is irrelevant to talk much about the VOT in this language. Its value is negative or neutral but never more than zero.

3.2.5 The release stage of stops

In English, stop consonants do not always have to be released. This means that they are not pronounced fully in certain situations. To illustrate an unreleased stop, the superscript symbol is used and /t/ becomes [t[̚]], for example. According to Cruttenden, apart from other circumstances, stops usually become unreleased or have a distinct release in the following situations (Cruttenden 2001, 157-160):

- 1) In **syllable final** positions, there is usually no audible release of a stop. Because this process appears mostly in running speech of colloquial English, it is not significant for the purpose of the present thesis.
- 2) In **stop clusters** (when a stop is followed by another stop or an affricate), the release of the first stop is not audible. This happens either when the two stops occur side by side within a word or at word boundaries. Example in (46) contains such phenomenon.
- 3) When **followed by a nasal** (either syllabic or initial in the following syllable), the air comes out through the nose. This phenomenon is called “nasal release” and is transcribed as shown in (47).
- 4) When **followed by a lateral approximant** /l/, the release of a stop consonant happens in a way that one or both sides of the tongue are lowered to allow the air to escape. This is called “lateral release” and it applies for a situation when the /l/ sound is either syllabic or initial in the next syllable or word.

(46) *skateboard* ['skeɪt[̚]bɔ:d]

(47) *kitten* ['k^hɪt[̚]n̩], *chutney* ['tʃʌt[̚]ni]

(48) *atlas* [ˈætˈlæs]

Czech stops are **always released** but they may also have nasal or lateral release in a number of words as shown in (49).

(49) *chutnat* [ˈxutˠnat], *atlas* [ˈatˠlas]

3.2.6 Velarization of /l/

This allophonic process can be heard in English but not in Czech. Phoneme /l/, when at the end of a word after a vowel, before a consonant or when syllabic, becomes **velarized** (Ladefoged and Johnson 2011, 77). Example words are shown in (50). Palková claims that velarization is secondary articulation at the soft palate (1994, 145). Some American varieties of English use the [ɫ] in the middle or as a first sound in a word, as well.

(50) *pill* [ˈpʰɪɫ], *film* [ˈfɪɫm], *middle* [ˈmɪdɪɫ]

3.2.7 Ng coalescence

Historically, /ŋ/ in English occurred only before /k/ or /g/ and it was not classified as a phoneme, it was an allophone of /n/. However, with the deletion of /g/ in the sequence /ŋg/, /ŋ/ became a phoneme. Most varieties of English including Received Pronunciation omit the final consonant /g/ (Cruttenden 2001, 199). When in the middle of a word, another rule applies, though. Examples in (51) show the difference in pronunciation of similar words. A word consisting of one morpheme is pronounced with /g/, while a word containing two or more morphemes is usually pronounced without /g/.

(51) *linger* [ˈlɪŋgə], *hanger* [ˈhæŋə]

Czech loan words such as in (52) are pronounced with the final /g/ which is devoiced and becomes [k].

(52) *gang* [ˈgɛŋk] or [ˈgɛŋk̚], *gong* [ˈgɔŋk]

3.2.8 Syllabification of final consonants

The lateral approximant /l/ becomes **syllabic** when it appears at the end of a word immediately after a consonant (Ladefoged and Johnson 2011, 74). Example supporting this rule is provided in (53). Similar rule applies for nasals, as well. The difference is,

though, that nasals /m/ and /n/ become syllabic when at the end of a word after an obstruent (Ladefoged and Johnson 2011, 74). To illustrate the difference, the first example word in (54) has syllabic /m/ contrary to the second where the nasal is preceded by a sonorant and therefore does not become syllabic. Example of a Czech word with such phenomenon is shown in (55).

(53) *drizzle* ['dɪzəl]

(54) *chasm* ['kʰæzəm], *film* ['fɪlm]²²

(55) *nesl* ['nesl]

3.3 Allophonic processes of vowels

Vowels of English and Czech do not undergo as many allophonic processes as consonants. This part focuses on the so-called “hiatus” and length of vowels.

3.3.1 Hiatus

When two vowels stand side by side and each of them is a part of a different syllable, the **linking sound** is added in between to make the whole segment sound more fluent (Palková 1994, 147). This phenomenon mostly appears at word boundaries in English but it can also occur within one word. Some English compounds include this kind of process as shown in (56). In Czech, hiatus occurs after /ɪ/ followed by another vowel as in (57).

(56) *cooperate* [kəʊ^wɒpəreɪt]

(57) *opium* ['ɒpɪ^hum]

3.3.2 Length of vowels

Allophonic rules for the length of English vowels might be difficult for the Czech learners of English to identify. The vowel length in Czech is determined by the diacritics over the specific vowel in written form of words. Vowel sound in the example Czech word in (58) is usually pronounced longer than in the similar English word in (59).

(58) *být* ['bi:t]

(59) *beat* ['bit]

²² Examples in (54) were borrowed from Ladefoged and Johnson (2011, 74).

When describing differences in vowel length within English, the following consonantal sound must be taken in consideration. According to Ladefoged and Johnson, a vowel of a given quality is longest in an open syllable, next longest when followed by a voiced consonant and shortest when followed by a voiceless consonant (2011, 100). This kind of difference occurs in words *bee*, *beat*, *bead*.²³ *Figure 7* shows word *beet* with vowel /i/ of approximate length 180 miliseconds, while *Figure 8* shows word *bee* containing the same vowel quality but different length, approximately 320 miliseconds. The same rule applies to diphthongs. However, this phenomenon does not relate to words ending in /m/, /n/, /ŋ/ and /l/ since these phonemes do not have their voiceless variant (Cruttenden 2001, 95).

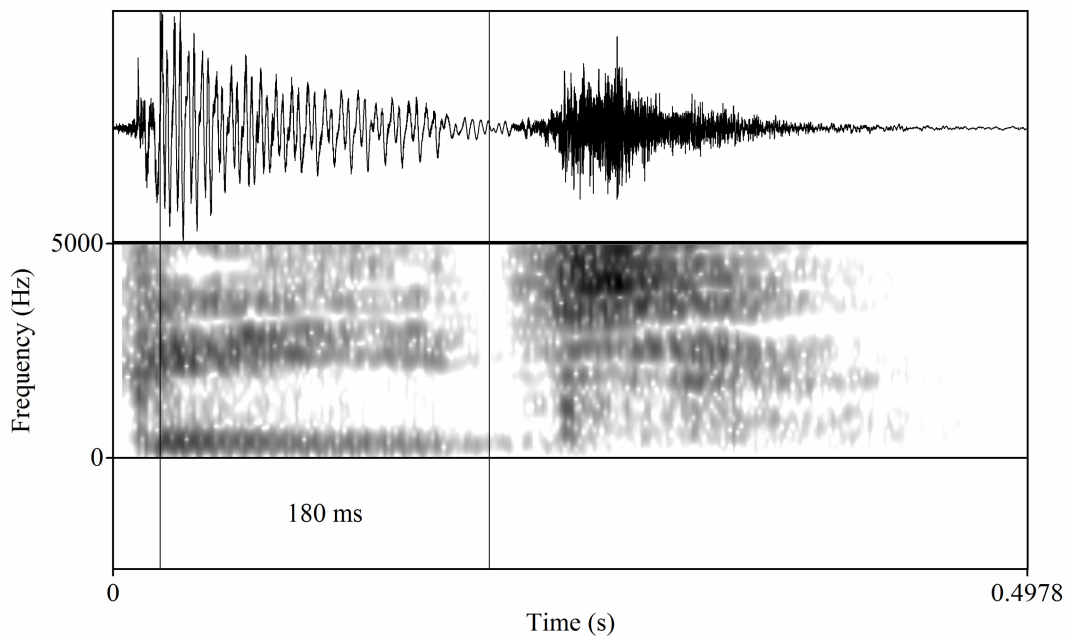


Figure 7: Waveform and spectrogram of word *·beet*²⁴

²³ The vowel sound in all three words is transcribed the same – [i].

²⁴ Recording *beet.wav* was downloaded from <http://slovník.seznam.cz>.

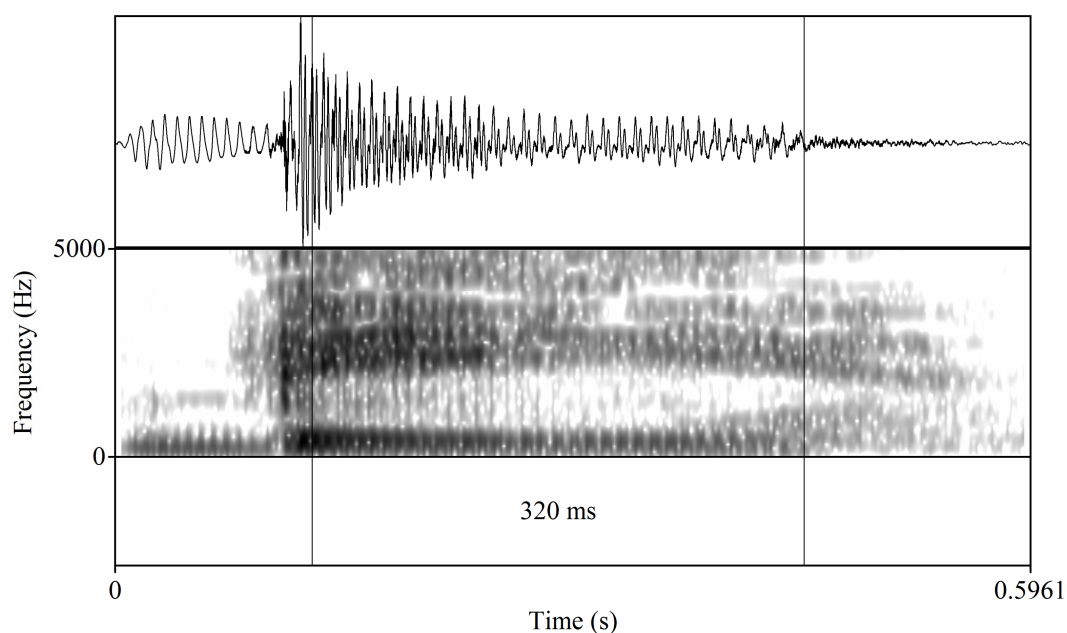


Figure 8: Waveform and spectrogram of word *bee*²⁵

Vowels and diphthongs are also longer when they appear in a stressed syllable, making /əʊ/ in the first example word in (60) longer than in the second word. Ladefoged and Johnson also claim that a vowel in a monosyllabic word is longer than in a word with two syllables and shortest in a word consisting of two or more syllables (2011, 101).

(60) *below* [bɪ'ləʊ], *billow* ['bɪləʊ]²⁶

²⁵ Recording *bee.wav* was downloaded from <http://slovník.seznam.cz>.

²⁶ Examples in (60) were borrowed from Ladefoged and Johnson (2011, 101).

4 Second language pronunciation acquisition and research proposal

This chapter deals with difficulties that foreign learners of a language have and provides the research proposal including sample questionnaire, discussion on possible outcome and the actual results.

4.1 Learning pronunciation of a foreign language

4.1.1 General theory of second language pronunciation acquisition

One of the linguistic sub-areas that a learner of a foreign language has to deal with is pronunciation. According to Hummel, acquiring pronunciation of a foreign language is usually the most difficult step in the process of learning a new language and at the same time it is the most apparent indicator of nonnativeness (2014, 145). Foreign accent is a phenomenon that may cause various misunderstandings when talking to a native speaker of that particular language. There is a connection between sounds of L1 and L2. When perceiving or producing sounds of L2, learners use phonemic inventory of their L1. In her *Introducing Second Language Acquisition*, Hummel quotes famous Russian phonologist Trubetzkoy:

The sounds of the foreign language are given an incorrect phonological interpretation, since they are filtered through the ‘phonological sieve’ of one’s own language. (Hummel 2014, 145)

This could mean that while perceiving and producing L2, learners tend to replace the sounds of L2 with the closest sounds of L1. To illustrate this, example word in (61) contains aspiration of /p/. In this particular case, many Czech learners of English pronounce the initial stop consonant without aspiration because there is no such phenomenon in Czech, therefore the initial sound is pronounced [p].

(61) *pot* [‘p^hɒt]

The relation between perception and production of L2 has been discussed in numerous studies and researches. According to Hummel, in majority of cases, perception of L2 is usually more accurate than its production (2014, 145).

4.1.2 Flege's contribution to the study of second language pronunciation acquisition

James E. Flege, a phonetician and a university professor, conducted various studies and experiments concerning second language pronunciation acquisition.

Flege's **Speech Learning Model** (SLM) is a popular model that is concerned with speech perception and production. It predicts that sounds of L2 that are similar to those in L1 are more difficult for a learner to perceive and produce than those that differ extensively (Hummel 2014, 145). To support this idea, example word in (61) can also be used. The low back vowel /ɒ/ is not included in the Czech vowel chart (see *Figure 3* in section 2.1.2) and Czech learners of English usually tend to replace it with mid-high back vowel /o/. These vowels are both rounded and back so they can be considered similar in a way, making it difficult for a learner to distinguish between them. Another example is a study by Flege which showed that even native speakers of English with high experience in French as L2 had problems producing unaccented French /u/ sound but at the same time they managed to produce French /y/ sound perfectly (Flege 1987).

Flege also conducted several studies on production of **aspirated stops** and **length of vowels**. In one of his research studies (Flege 1980), he examined VOT of voiceless stops and length of vowels as produced by Saudi Arabians. Groups of speakers that participated in the experiment were native American speakers, Saudis living in the US less than one year and Saudis living in the US for more than two years. According to the results, generally, the VOT was longest when produced by native Americans, next longest when produced by Saudis living in the US for more than two years and shortest when produced by Saudis living in the US less than one year. The same tendency was discovered when saying minimal pairs *tap-tab*, *bat-bad* and *back-bag* where the vowel sounds of each pair were pronounced with approximately the same length by Saudis while Americans naturally differentiated the voiced/voiceless ending by the vowel length (Flege 1980, 123).

4.2 Research proposal

4.2.1 Sample questionnaire

The sample questionnaire is shown in Appendix. It consists of two parts – open questions and practical part (including pairs of words). The respondents of the present questionnaire will be students of the fourth year at a high school who intend to study English at a university. The present questionnaire will be handed to the students in paper but the process of filling it will be in a spoken way. The practical part will be

discussed with a student in Czech to allow them to express their thoughts properly. The respondents will be asked to comment on each pair of words and try to describe the identified differences in pronunciation. Their task is to match the same kind of distinctions together, as well.

4.2.2 Hierarchy of phonemic and allophonic differences to be mentioned by the respondents according to probability

This section provides author's presumptions about how successful the respondents will be at identifying the differences in pronunciation of the given words. Their assumptions will be based on their knowledge of pronunciation of English and Czech words which they have learned so far during their education at high school or by other means. Some differences will be relatively easy for them to spot but most students will find it difficult to identify a number of differences which they have not been told about at high school.

The author of the present thesis takes into consideration several factors that have influenced students' knowledge of phonetics and phonology and sorts the phonemic differences and allophonic changes into groups. Three groups are introduced – high probability, middle probability and low probability, based on author's presumptions about which differences will be easily recognized and which will be difficult for the respondents to identify. First, the author provides the table of phonemic and allophonic differences of consonants, then vowels and the last table provides allophonic processes within English only.

1) Differences between **English** and **Czech** in **consonantal** sounds

	EN	CZ
High probability		
Pronunciation of <i>r</i>	Rhotic approximant /ɹ/	Trill /r/
Pronunciation of <i>w</i>	Labio-velar approximant /w/	Voiced labiodental fricative /v/
Pronunciation of <i>j</i>	Voiced palato-alveolar affricate /dʒ/	Palatal approximant /j/
Middle probability		
Devoicing of fricatives and stops at the end of words	Voicedness remains	Loss of voicing
Allophonic realization of /l/ when final or before a consonant	Velarized lateral approximant [ɫ]	Lateral approximant [l]
Pronunciation of voiceless stops when stressed and syllable initial	Aspirated voiceless stops [p ^h], [t ^h] and [k ^h]	Unaspirated voiceless stops
Low probability		
Allophonic realization of /h/	Voiceless glottal fricative [h]	Voiced glottal fricative [ɦ]
Pronunciation of a stop before another stop	Unreleased stop	Released stop
Allophonic realization of /l/ when before /k/ and /m/	Absence of alveolar lateral approximant /l/	Alveolar lateral approximant [l]
Allophonic realization of /g/ preceded by /n/ at the end of a word	Absence of voiced velar stop /g/ after velar nasal /ŋ/	Voiceless velar stop [k]

Figure 9: Differences in consonantal sounds of English and Czech words

English rhotic approximant /ɹ/ is one of the first phonemes that Czech students at the very start of their English education learn about. This is because this consonantal sound is a very distinct one in the English language. Teachers usually use the imitation

of a “hot potato” in one’s mouth to practice the sound /ɹ/ with students. Much more common in languages around the world is the trill /r/ (Ladefoged and Johnson 2011, 47). This sound is a part of the Czech phonetic alphabet, as well. The pairs of words used as examples in the questionnaire are shown in (62). Letter *w* in Czech appears in borrowings only and is pronounced /v/. Example words from the present questionnaire are shown in (63). Difference in pronunciation of letter *j* in English and Czech is represented by pairs of words in (64) Pronunciation of interlingual homograph *jet* differs in the first sound. While in English this word is transcribed as [ˈdʒet], the speaker of Standard Czech pronounces it [ˈjɛt].

(62) *race-rasa, racquet-raketa, rum-rum, crab-krab, rap-rap*

(63) *waltz-waltz, twist-twist, walkman-walkman*

(64) *jet-jet, Jack-jak, jubilee-jubileum*

When considering pronunciation of separate words, devoicing at the end of words does not take place in Received Pronunciation contrary to Standard Czech. The respondents might realize the difference when saying the words aloud but in most cases they will probably devoice the final consonants. Pairs of words used in the questionnaire are shown in (65). Another phenomenon is the so-called “dark l”. In the present questionnaire, the author asks about the difference between words in (66). Czech students of English might be familiar with aspiration of voiceless stops in English, although this process does not occur in Czech. Pairs of words that were used to illustrate the difference are shown in (67).

(65) *led-led, lob-lob, smog-smog, crab-krab, detective-detektiv*

(66) *waltz-waltz, stool-st l, pill-pil, calculator-kalkula ka, film-film, cool-k l*

(67) *pink-pink, text-text, twist-twist, cockpit-cockpit, pill-pil, crab-krab, calculator-kalkula ka, palm-palma, cool-k l, detective-detektiv*

The last group of allophonic differences between English and Czech consonantal sounds includes those that will most probably not be identified by the respondents. These allophonic processes of English are being taught by teachers at high schools with so little emphasis that most students do not know about them. The first one is voiceless glottal fricative /h/ in English versus voiced glottal fricative /ɦ/ in Czech. In the present questionnaire, the author chose pairs of words as in (68). A stop occurring before

another stop in English is unreleased, unlike in Czech where stops are always released. To illustrate this, the author uses pairs shown in (69). In some English words, phoneme /l/ is not pronounced, usually when it precedes /k/ or /m/ such as in English words in (70). Another sound, the phoneme /g/, when at the end of words and after /ŋ/ sound, is not pronounced in English. Czech speakers, on the other hand, pronounce the final voiced stop /g/ as voiceless [k]. Pairs of words included in the questionnaire are shown in (71).

(68) *house-house, hit-hit, ham-ham*

(69) *sect-sekt, cockpit-kokpit, detective-detektiv, fact-fakt*

(70) *palm-palma, walkman-walkman*

(71) *gang-gang, gong-gong*

2) Differences between **English** and **Czech** in **vowel** sounds

	EN	CZ
High probability		
Pronunciation of <i>a</i>	Low front vowel /æ/	Low front vowel /a/
Pronunciation of <i>y</i> and <i>i</i>	Closing diphthong /aɪ/	High front vowel /ɪ/
Pronunciation of <i>o</i>	Closing diphthong /əʊ/	Mid-high back vowel /o/
Pronunciation of <i>u</i>	Central vowel /ʌ/	High back vowel /u/
Pronunciation of sequence <i>au</i>	Mid-low back vowel /ɔ/	Closing diphthong /au/
Middle probability		
Pronunciation of <i>a</i>	Low back vowel /ɑ/	Low front vowel /a/
	Low front vowel /æ/	Mid-low front vowel /ɛ/
	Central vowel /ə/	Mid-low front vowel /ɛ/
Pronunciation of <i>e</i>	High back vowel /ɪ/	Mid-low front vowel /ɛ/
Low probability		
Pronunciation of <i>a</i>	Central vowel /ə/	Low front vowel /a/
Pronunciation of <i>i</i>	High front vowel /i/	High front vowel /ɪ/
Pronunciation of <i>o</i>	Low back vowel /ɒ/	Mid-high back vowel /o/
Pronunciation of sequences <i>oo</i> and <i>u</i>	High back vowel /ʊ/	High back vowel /u/
Different length of vowels of the same quality	High front vowel /i/	High front vowel /i:/
	High back vowel /u/	High back vowel /u:/

Figure 10: Differences in vowel sounds of EnglishóCzech words

In case of vowels, phonemic differences are introduced. The respondents should be familiar with the English vowel sound /æ/, though some may pronounce it more like /ɛ/. The pairs of words used in the questionnaire are shown in (72). Another difference in vowels is between /aɪ/ in English and /ɪ/ in Czech, as seen in (73). The difference in words in (74) between /əʊ/ and /o/ will most likely be easily recognized by the respondents. The subjects will most probably recognize the difference between /ʌ/ and /u/ in words in (75), although it is highly probable that they will pronounce the English word with /a/ because the central vowel /ʌ/ is not present in the vowel chart of Czech.

Pronunciation of the diphthong /au/ in Czech instead of English /ɔ/ in example words in (76) should also be easily differentiated by the subjects.

(72) *ram-rameno, crab-krab, pack-pak, ballet-balet*

(73) *mobile-mobil, cyclist-cyklista, psycho-psycho, virus-virus*

(74) *ego-ego, ghetto-ghetto, mobile-mobil, echo-echo, auto-auto, poker-poker, psycho-psycho*

(75) *skunk-skunk, puck-puk, plus-plus*

(76) *auto-auto, pause-pauza*

The group of middle probability consists of three differences to be mentioned. The first one is the distinction between /ɑ/ and /a/, included in words in (77). It is quite probable that the respondents will find the English sound longer than the Czech. This is not true, though. The difference is in the quality of these two vowel sounds. Even though both vowels are low, the /ɑ/ sound is produced far back in the oral cavity and does not occur in Czech, at all. The /a/ sound is made in the front part and its occurrence in Received Pronunciation is only in diphthong /aɪ/. Next difference that may be mentioned by the students is between vowel sounds /æ/ and /ɛ/ as in words in (78). The Czech word *gentleman* is an obvious borrowing from English and is pronounced with /ɛ/ as the final vowel sound instead of English /ə/. When dealing with loanwords, Czechs sometimes tend to phonemically rewrite the original word so that the speakers know how to pronounce it. In the case of *gentleman*, there are two possible forms of this word in Czech – *gentleman* and *dfentlmen* (Slovník spisovného jazyka českého 2011). Vowel sounds /i/ in English and /ɛ/ in Czech pronounced in pairs in (80) might be differentiated but there is a probability that the subjects will not know how to pronounce these words. They will most likely not have problem identifying difference between *Peter* and *Petr* since the English name is well-known by most students. A difficulty may arise with pair *echo-echo*. The English version has /ɛ/ as the initial sound, as well as the Czech. But the respondents might compare this word to the similar *ego* which has /i/ as the initial sound.

(77) *card-karta, partner-partner, palm-palma, part-part*

(78) *gang-gang*²⁷

²⁷ There are two possible pronunciations of the vowel in Czech – /ɛ/ and /a/.

(79) *gentleman-gentleman*

(80) *ego-ego, emu-emu, thesis-teze, Peter-Petr*

Differences that are described in this paragraph will most probably be not mentioned by the respondents. The first one can be seen in a different pronunciation of the pairs in (81). The first and the last sound in *America* is /ə/ while speakers of Czech pronounce /a/ in *Amerika*. Students of high schools are most likely not familiar with difference between final /i/ in English and /i/ in Czech, Thus, differences in final sounds in words in (82) will most probably not be recognized. Difference between English /ʊ/ and Czech /o/ in words in (83) is also very difficult for a Czech high school student to identify. This phenomenon, as well as many others, supports the idea of Flege's Speech Learning Model (see 4.1.2). Vowel /ʊ/ has the same classification as vowel /u/ – both are produced with the tongue at the high back position. The /ʊ/ is produced a bit lower, though. The difference in example words in (84) is still barely identifiable by a Czech native speaker. The last difference in vowel sounds with low probability of recognition by the respondents is the vowel length of the vowels of the same quality. These are /u/ and /i/ in English and their long versions /u:/ and /i:/ occurring in Czech. The respondents will most likely consider the length of both respective vowels in words in (85) the same.

(81) *spaghetti-pagety, America-Amerika, banana-banán*

(82) *spaghetti-pagety, chilli- ili*

(83) *pod-pod, bod-bod, hockey-hokej*

(84) *look-luk, book-buk, kaput-kaput, pull-pult*

(85) *team-tým, beat-bít, spleen-splín, loser-lúza, pool-p l, doom-d m*

3) Differences in **consonantal** and **vowel** sounds **within English**

High probability			
Pronunciation of <i>n</i> before <i>k</i> and <i>g</i> or else	Alveolar nasal /n/		Velar nasal /ŋ/
Voicing of final -s	Voiceless alveolar fricative /s/		Voiced alveolar fricative /z/
Middle probability			
Pronunciation of <i>l</i> when final or before a consonant	Velarized lateral approximant [ɫ]		Lateral approximant [l]
Pronunciation of voiceless stops when stressed and syllable initial or after /s/	Aspirated voiceless stops [p ^h], [t ^h] and [k ^h]		Unaspirated voiceless stops
Ng-coalescence	Sequence /ŋg/, /ŋk/		Velar nasal /ŋ/
Low probability			
Different length of vowels	Shortest before a voiceless consonant	Middle before a voiced consonant	Longest with no following consonant
Voicing of approximants	Voiceless when preceded by an aspirated stop		Voiced when in else position
Allophonic realization of phoneme /n/ when before an affricate or else	Dental nasal [ɳ]		Alveolar nasal [n]
Pronunciation of <i>o</i>	Low back vowel /ɒ/		Central vowel /ʌ/
Pronunciation of a stop before another stop	Unreleased stop		Released stop

Figure 11: Differences within English

The last part of the present questionnaire deals with the differences in both consonantal and vowel sounds within English. The respondents are asked to find a difference in pronunciation of the underlined letters. They should easily recognize the difference between /n/ and /ŋ/ in words in (86), though having difficulties with

describing difference. Voicing of /s/ at the final position in a word is a well-known phenomenon that students are taught at high school. Pairs of words included in the questionnaire are shown in (87).

(86) *sink-sin, bank-band, mango-manly*

(87) *packs-pads, cats-dogs, hence-hens*

The respondents may distinguish the “velarized l” at the end of words from the regular /l/ that stands anywhere else in a word. Pairs of words containing this kind of difference are written in (88). Another difference is in the pronunciation of voiceless stops in words shown in (89). It is quite probable that the subjects will not realize the difference in pronunciation of a voiceless stop preceded by /s/ contrary to being an initial sound in a word. As for the ng-coalescence, the respondents should identify the difference between *think* and *thing* but difference in pronunciation of voiced velar stop /g/ in other pairs of words shown in (90) might be difficult for the respondents to tell.

(88) *pole-polar, thrill-thriller, chill-chilly, silly-silk*

(89) *spill-pill, pan-span, till-still, scan-can*

(90) *finger-singer, hanger-linger, think-thing*

Length of vowels in English is a phenomenon that is so hidden to Czech students that it is very unlikely that they will identify any difference in vowel sounds of example words in the present questionnaire shown in (91). Similarly as in a study made by Flege (1980) with Saudi Arabians, the Czech subjects will most probably pronounce all the vowel sounds with approximately the same length. Devoicing of approximants preceded by an aspirated stop, as in words in (92), will also most likely be very difficult for the respondents to identify. Assimilation of place of articulation of /n/ before dental fricative /θ/ is included in pairs of words shown in (93) and it is also a phenomenon process that needs special attention towards the movement of the articulators to be identified. Difference between /ɒ/ and /ʌ/ as seen in words in (94) will also be very difficult for the respondents to recognize since these phonemes are very close to each other in the vowel chart and they do not exist in Czech. Students are most probably not familiar with release stage of stops, as mentioned in the first part about differences between English and Czech consonants. Examples of this phenomenon used in the present questionnaire are shown in (95).

- (91) *bee-beet-bead, pick-pig, need-neat, void-boy*
- (92) *raw-prawn, clay-lay, twist-whisper*
- (93) *panther-pant, ten-tenth, month-man*
- (94) *bother-brother, monk-monarch*
- (95) *skateboard-skater, napkin-napalm, goodish-goodbye, cupcake-cupful*

4.2.3 Results analysis

To test the present questionnaire, three students of the fourth year at high school intending to study English at a university were asked to take part. For the sake of further analysis, each respondent's answers were recorded. The students pronounced each word aloud and tried to identify the differences in pronunciation and describe them. Then they were asked to match the same kinds of differences together and create groups according to the difference. This section provides sample analysis of the recordings and points out some wrong pronunciations of words.

The first part (open questions) was discussed mostly in English. The subjects described their English education – the average length of learning English was 11 years, starting approximately in the second grade of primary school. Their methods of learning English pronunciation other than at school were generally similar – watching films with English subtitles, listening to songs and reading internet articles in English. None of the respondents attended any private lessons or courses of English. Speaker 2 had an experience of being misunderstood when pronouncing word *tissue* as /tisu/. The other subjects did not remember any such situation but pointed out that, for example, vowels, when pronounced wrong way, could cause misunderstandings. When thinking of differences between English and Czech, all subjects mentioned the contrast between /ɹ/ and /r/, saying that the Czech trill sounds “sharper”, in some way. They also pointed out the fact that phoneme /w/ does not occur in Czech.

The respondents considered the practical part of the present questionnaire to be rather difficult. When it comes to comparing author's presumptions in section 4.2.2 to the actual results, several findings arise. Those differences that were classified as highly probable to be identified were generally quite well spotted by the respondents. The respondents noticed the differences but quite often pronounced the English words wrong way, pronouncing *ram* as [ˈɹɛm] or *puck* as [ˈpʰak], for example.

A problem arose when the respondents were asked to differentiate final voiced consonants in English from final devoiced consonants in Czech. Speaker 2, for example, pronounced word *led* as [ˈlet], thus making it sound the same as the Czech *led*, as seen in *Figure 12*. The alveolar closure was not accompanied by vibration of vocal cords, therefore /t/ was pronounced.

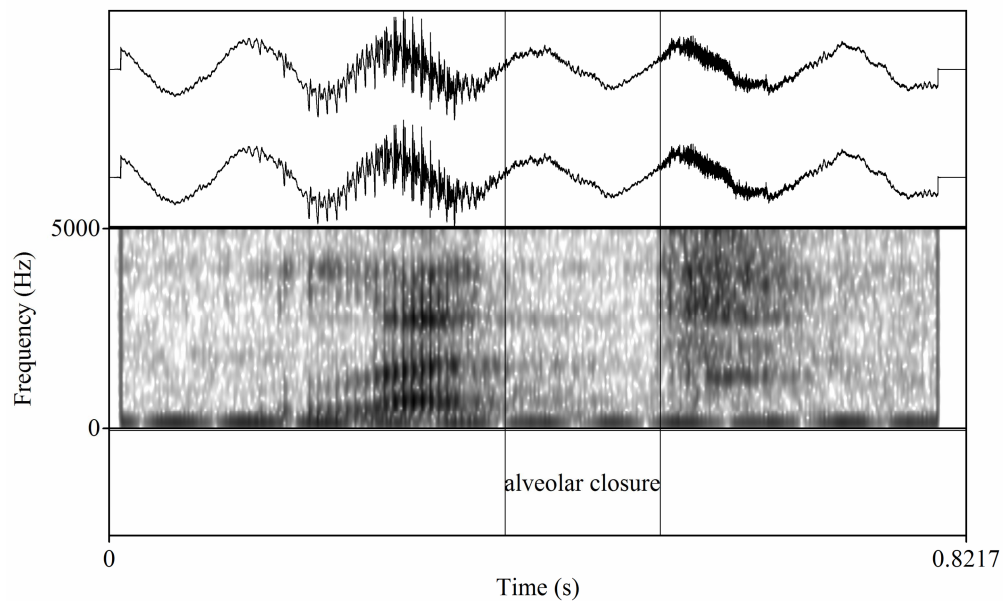


Figure 12: Word *led* as pronounced by Speaker 2

Speaker 1 also had difficulties pronouncing the final consonants in English words properly, contrary to Speaker 3 who was quite aware of this phenomenon.

Another allophonic process that the respondents had problem with was aspiration of voiceless stops in English. Speaker 2 did not use aspiration at all or incorrectly in word *spill*, for example, as shown in *Figure 13* where the burst of noise is illustrated.

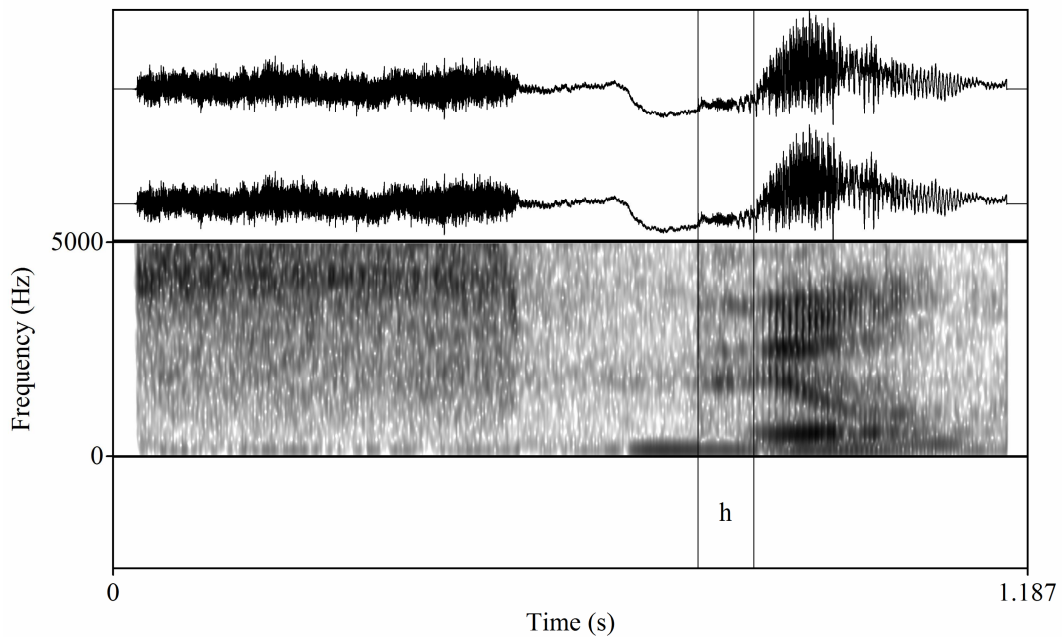


Figure 13: Word *-spill* as pronounced by Speaker 2

Speaker 1, on the other hand, used aspiration correctly in most of words. *Figure 17* shows unaspirated /t/ in word *still* while *Figure 15* shows this consonant was pronounced with aspiration by Speaker 2.

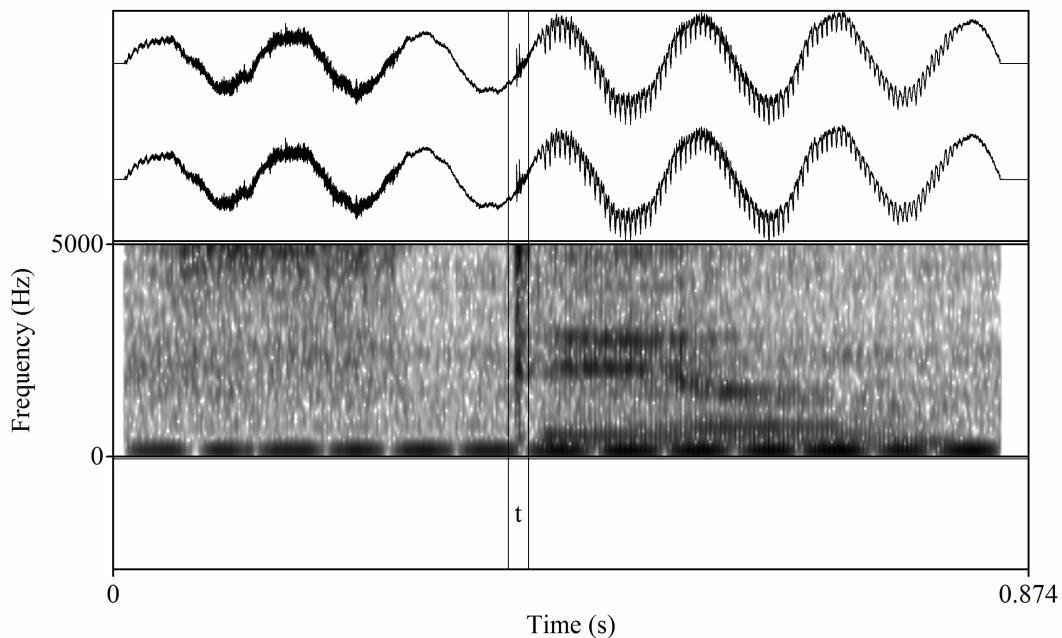


Figure 14: Word *-still* as pronounced by Speaker 1

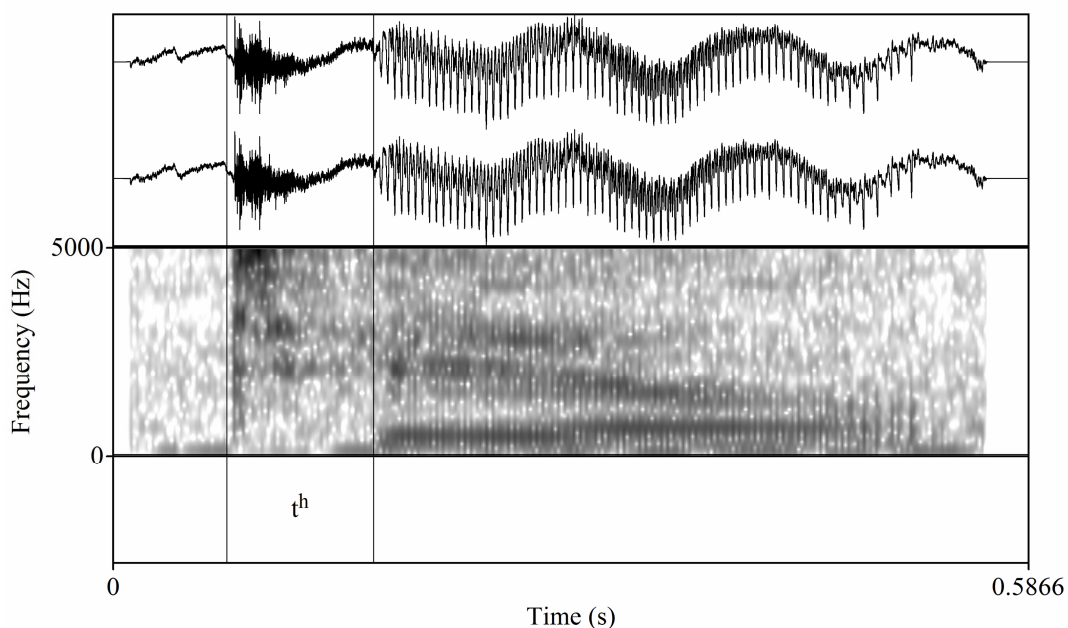


Figure 15: Word *-hill* as pronounced by Speaker 1

Unrelease of a stop followed by another stop is one of the allophonic processes of English that none of the respondents identified. Word *skateboard* in particular brought some interesting findings. Speakers 1 and 3 pronounced the /t/ fully released. Speaker 2, who was influenced by the regressive assimilation of voicing that happens a lot in Czech, pronounced the first stop as /d/, as *Figure 16* shows.

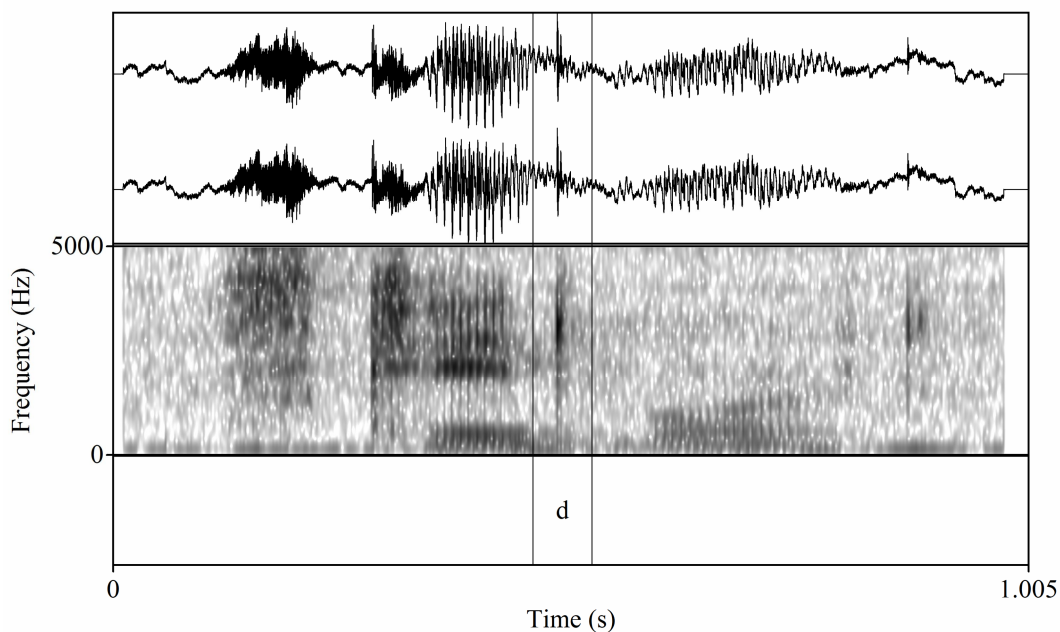


Figure 16: Word *-skateboard* as pronounced by Speaker 2

The respondents had difficulties recognizing different lengths of vowels in English–Czech pairs of words, as well as in English–English pairs. A problem arose with words *wood*, *look* and *book* which Speakers 1 and 2 pronounced with vowel /u:/. As for the other pairs of words with difference in vowel length, despite pronouncing these words correctly, the subjects did not realize the difference. This happened in a number of cases. *Figure 17* shows word *pig* as pronounced by Speaker 3, with vowel length of 157 milliseconds while *Figure 18* shows word *pick* as pronounced by Speaker 3, with vowel length of 113 milliseconds. The difference in the vowel length was made clear but the subject still did not manage to identify it.

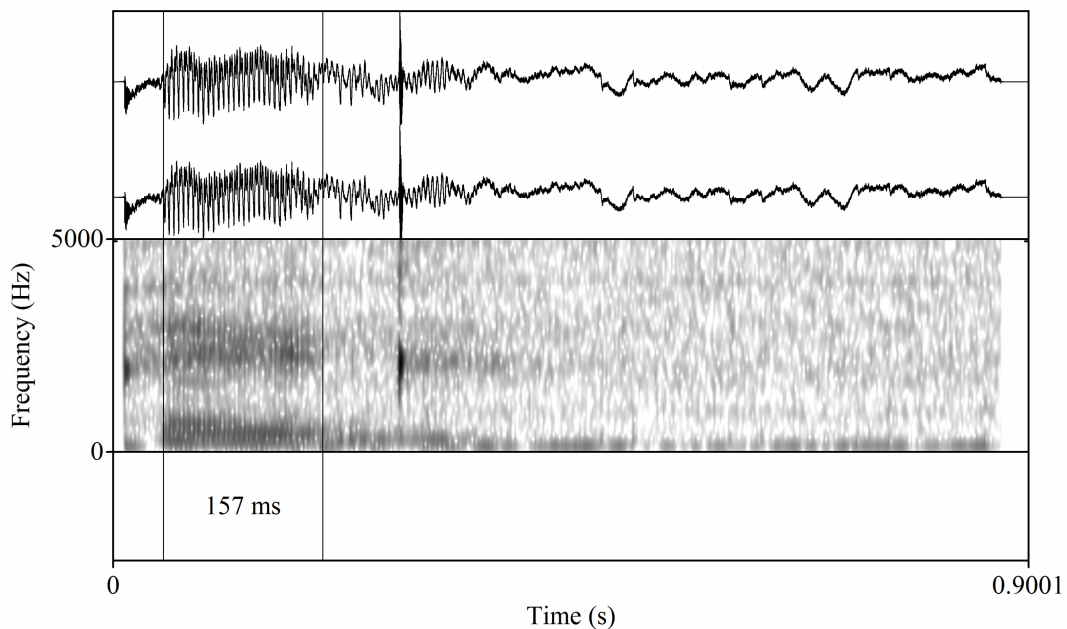


Figure 17: Word *pig* as pronounced by Speaker 3

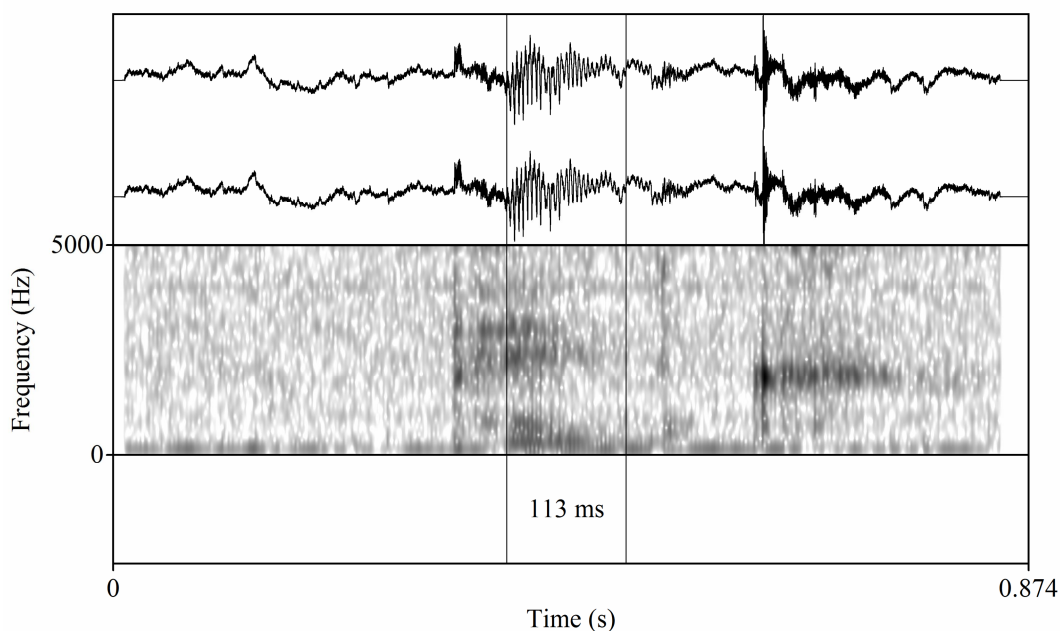


Figure 18: Word *pick* pronounced by Speaker 3

4.2.4 Future research on the topic

The future research on this topic that would follow the proposal requires answers to some questions.

Concerning accents of English that students have decided to stick to, the research should be designed in a way that it is able to compare Received Pronunciation to Standard Czech, as well as General American to Standard Czech, for example. Although students at Czech schools are taught pronunciation and vocabulary of British English mostly, majority sticks to imitating General American accent because it is easier for them and allows them to speak more fluently.

Another problem arises when talking about voiceless alveolar stop /t/. Although both English and Czech use the same IPA symbol, the English /t/ is affricated in many cases, and therefore should be transcribed as [t^s] (Cruttenden 2001, 160). Thus, the question is, whether the respondents should be required to distinguish this kind of difference. Speakers of various accents of British English, for example, tend to affricate the consonant /t/. It also depends on the position in a word. When dealing with Received Pronunciation, though, it is not explicitly necessary to consider such distinction.

5 Conclusion

The present thesis aimed on differences in pronunciation between English and Czech, focusing on Received Pronunciation and Standard Czech. A research proposal was made and the sample questionnaire was tested by interviewing three future students of English at a university. The main sources used for the present thesis were Peter Ladefoged and Keith Johnson's *A Course in Phonetics*, Alan Cruttenden's *Gimson's Pronunciation of English* and Zdena Palková's *Fonetika a fonologie e-tiny*.

Chapters *Phonemic differences between English and Czech* and *Allophonic processes of English and Czech* sum up the phonemic and allophonic differences between English and Czech and are later referred to in chapter *Second language pronunciation acquisition and research proposal*.

The respondents of the present questionnaire did not succeed to identify the differences in many cases. Among allophonic processes that were not recognized or that the respondents found greatest difficulties with were allophonic realization of /h/, unrelease of stops, length of vowels and aspiration of voiceless stops. Surprisingly, aspiration of voiceless stops, predicted by the author as an allophonic process that could be rather identifiable by the subjects, meant more difficulties than expected, eventually. Although students pronounced a number of words correctly and made the difference between the English and the Czech word clear, they often did not realize the distinction or could not find the right words to describe it, even when the discussion was in Czech. Czech alveolar trill /r/, for example, was described as "sharp" or "hard" compared to English rhotic approximant /ɹ/ which sounded "softer" and "more indefinite" to the respondents.

There were also many situations when the subjects pronounced two different words the same way but realized there is a distinction in pronunciation between them. For example, Speaker 1 pronounced words *packs-pads* with the same final sound [s] but at the same time claimed that there should be a difference because of the preceding consonant.

The research proposal is available for future research on this topic and with some possible modifications (see 4.2.4), it can serve as a more detailed study of Czech learners' implicit knowledge of English pronunciation.

6 Resumé

Tato bakalářská práce se zabývá rozdíly ve výslovnosti angličtiny a češtiny na fonemické a alofonické úrovni se zaměřením na výslovnostní normy Received Pronunciation a spisovné češtiny. Na základě kontrastivní analýzy výslovností obou jazyků byl sestaven vzorový dotazník, který může sloužit jako prostředek pro výzkum na téma „implicitní znalosti českých mluvčích o anglické výslovnosti“. V práci jsou použity především tyto tři hlavní zdroje – kniha Petera Ladefogeda a Keitha Johnsona *A Course in Phonetics*, dále potom *Gimson's Pronunciation of English* od autora Alana Cruttendena a v neposlední řadě kniha *Fonetika a fonologie e-tiny* autorky Zdeny Palkové.

Teoretická část řeší rozdíly jednak mezi anglickými a českými fonémy, druhak alofonické změny hlásek v obou jazycích. Každý jev je podrobně popsán a vysvětlen na příkladech. Autor se nejvíce zaměřuje na asimilaci znělosti, která se v obou jazycích hojně vyskytuje.

V praktické části práce autor představuje teoretické pozadí procesu učení se výslovnosti druhého jazyka a navrhuje vzorový dotazník. Poté se pokouší odhadnout, kterých rozdílů si respondenti dotazníku všimnou a které jim budou dělat potíže, případně dané rozdíly neidentifikují vůbec. Autorův odhad je realizován formou tabulek, které jsou záhy okomentovány. Poslední část kapitoly je věnována analýze nahrávaných rozhovorů se třemi respondenty, na kterých byl vzorový dotazník vyzkoušen. Autor identifikuje jejich největší chyby ve výslovnosti a zamýšlí se nad případným dalším výzkumem na toto téma.

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8 Appendix

8.1 Part 1 ó Open questions

- 1) How long have you been learning English? Do you learn English only at school or do you attend any English courses or private lessons?
- 2) Do you learn pronunciation only by listening to the teacher? What other methods do you use to learn and practice pronunciation?
- 3) Do you have any experience of being misunderstood when pronouncing a word wrong way? Think of some examples that could put you in such situation.
- 4) When you compare Czech and English sounds, what differences come to your mind?

8.2 Part 2 ó Differences in pronunciation of given pairs of words

8.2.1 Differences between English and Czech in consonantal sounds

Read the following words aloud and focus on the differences in **consonantal** sounds. What consonantal sound/s do the words (or their underlined parts) differ in? Try to describe the difference and make groups by matching same differences together:

EN	CZ
<u>w</u> altz	<u>w</u> altz
house	house
race	rasa
pink	pink
hit	hit
led	led
stool	stůl
text	text
sin	syn
jet	jet
lob	lob
soup	sup
sect	sekt
racquet	raketa
Jack	jak
juice	džus

smog	smog
twist	twist
cockpit	kokpit
gang	gang
magazine	magazín
pill	pil
rum	rum
crab	krab
<u>cal</u> culator	<u>kalk</u> ulačka
palm	palma
film	film
gong	gong
cool	kůl
<u>walk</u> man	<u>walk</u> man
detective	detektiv
rap	rap
fact	fakt
<u>ju</u> bilee	<u>ju</u> bileum
ham	ham

8.2.2 Differences between English and Czech in vowel sounds

Read the following words aloud and focus on the differences in vowel sounds. Try to describe the differences and make groups by matching same differences together:

EN	CZ
ram	<u>ra</u> meno
ego	ego
card	<u>ka</u> rta
gang	gang
team	tým
<u>pa</u> rtner	<u>pa</u> rtner
skunk	skunk
<u>pa</u> use	<u>pa</u> uza
ghetto	ghetto

look	luk
palm	<u>pal</u> ma
spaghetti	špagety
mobile	mobil
beat	bít
den	den
<u>e</u> mu	<u>e</u> mu
part	part
pod	pod
plus	plus
spleen	sp ^l ín
crab	krab
<u>l</u> oser	<u>l</u> úza
book	buk
bod	bod
pack	pak
gentleman	gentleman
echo	echo
<u>m</u> ister	mistr
chilli	čili
kap <u>u</u> t	kap <u>u</u> t
th <u>e</u> sis	teze
<u>h</u> ockey	<u>h</u> okej
pool	půl
puck	puk
auto	auto
<u>b</u> allet	<u>b</u> alet
<u>p</u> oker	<u>p</u> oker
cyclist	cyklista
America	Amerika
pull	pult
psycho	psycho
<u>b</u> anana	<u>b</u> anán

doom	dũm
<u>v</u> irus	<u>v</u> irus
P <u>et</u> er	P <u>et</u> r

8.2.3 Differences in pronunciation within English

Look at the following pairs of English words and try to spot the differences in pronunciation of the underlined parts. Try to describe the difference and make groups by matching same differences together:

spill		pill	
<u>bee</u>	<u>beet</u>		<u>bead</u>
finger		singer	
<u>pan</u>		span	
po <u>le</u>		po <u>lar</u>	
<u>till</u>		st <u>ill</u>	
s <u>in</u> k		s <u>in</u>	
<u>read</u>		re <u>el</u>	
pack <u>s</u>		pad <u>s</u>	
<u>raw</u>		p <u>raw</u> n	
p <u>ick</u>		p <u>ig</u>	
hanger		linger	
thr <u>ill</u>		thr <u>iller</u>	
<u>would</u>		<u>wood</u>	
pan <u>ther</u>		pan <u>t</u>	
<u>need</u>		<u>neat</u>	
s <u>can</u>		c <u>an</u>	
f <u>ilm</u>		f <u>ill</u>	
hip <u>s</u>		clock <u>s</u>	
th <u>ink</u>		th <u>ing</u>	
cl <u>ay</u>		l <u>ay</u>	
bo <u>ther</u>		bro <u>ther</u>	
po <u>cket</u>		pack <u>age</u>	
ch <u>ill</u>		ch <u>illy</u>	
skate <u>board</u>		skate <u>r</u>	

l <u>en</u> d	bl <u>an</u> d
cat <u>s</u>	dog <u>s</u>
mo <u>n</u> k	mo <u>n</u> arch
te <u>n</u>	te <u>n</u> th
ba <u>n</u> k	ba <u>n</u> d
nap <u>k</u> in	nap <u>a</u> lm
ma <u>n</u> go	ma <u>n</u> ly
si <u>l</u> ly	si <u>l</u> k
vo <u>i</u> d	bo <u>y</u>
good <u>i</u> sh	good <u>b</u> ye
tw <u>i</u> st	wh <u>i</u> isper
he <u>n</u> ce	he <u>n</u> s
mo <u>n</u> th	ma <u>n</u>
cup <u>c</u> ake	cup <u>f</u> ul