Filozofická fakulta Univerzity Palackého
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Bilingual acquisition of Czech and English stops: An acoustic study of VOT

(Bakalářská diplomová práce)

Autor: Iva Jiřištová
Vedoucí práce: Mgr. Šárka Šimáčková Ph.D.
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Autor: **Iva Jiřištová**
Studijní obor: Anglická filologie
Vedoucí práce: **Mgr. Šárka Šimáčková, PhD.**
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Abstract

This study analyses the bilingual acquisition, code-switching and the Voice Onset Time (VOT) production in three simultaneous bilinguals aged 4 to 6. The paper is an acoustic study and is based on the experiment with the bilingual children. The aim of the study is to compare the voiceless plosives /p, t, k/ in the Czech and English language as there is a difference in a length of VOT and aspiration. The result will also reveal whether the bilingual children are capable of immediate code-switching and using the appropriate consonant sounds inventory or the two systems interfere into one another.

The theoretical part reviews other linguistic studies dealing with bilingualism, VOT and code-switching. It also includes factors that can influence bilingual speech production.

The practical part comprises the analysis of the experiment with a detailed description of the procedure. Background information about the participants is also included in this part.

Keywords: bilingualism, bilingual children, VOT, code-switching, Czech voiceless consonants, English voiceless consonants

Abstrakt

Tato bakalářská práce se zabývá osvojením si fonetických systémů u bilingvních jedinců, přepínáním jazyků mezi sebou, tzv. code-switching,VOT a s tím spojenou aspirací.. Bakalářská práce je akustickou studií, jejímž základem je zvukový experiment se třemi bilingvními dětmi ve věku 4 až 6. Cílem práce je srovnání neznělých souhlásek /p, t, k/ v češtině a angličtině, protože v těchto jazycích dohází k rozdílům právě u VOT a aspirace. Výsledky by měly ukázat, zda jsou bilingvní děti schopny použít správný fonetický systém pro dané slovo nebo zda dochází k záměně těchto systémů při přepínání z jednoho jazyka do druhého.

Teoretická část uvádí studie, které se také zabývají bilingvismem, VOT a přepínáním kódů. Faktory, které ovlivňují produkci VOT a aspirace naleznete také v této části.

Praktická část obsahuje popis a průběh experimentu a základní informace o účastnících experimentu.

Klíčová slova: bilingvismus, bilingvní děti, VOT, přepínání kódů, české neznělé hlásky, anglické neznělé hlásky, aspirace

Content

1 Introduction

Many linguists and academic researchers have found interest in bilingualism and second language acquisition(SLA) for years and have conducted several studies in this field. However, the most significant development and expansion have been noted in the past 40-45 years. (Gass&Selinker)Even the Czech Republic is becoming less monolingual and thus it is not that unusual to come across bilingual or multilingual families in this country. Bilingualism is interesting not only from the sociological point of view but also many phoneticians have introduced studies investigating this phenomenon.

There are many types of bilingualism as well as many definitions. Some researchers consider anyone who knows any foreign word a bilingual (Edwards 2006). However, according to others, a bilingual is a person who possesses not only the ability to use two languages to some degree in everyday life, but also the skilled superior use of both languages at the level of the educated native speaker (Valdés 2001). In my thesis I am going to focus on simultaneous bilingual speakers of English and Czech aged between 4 and 6 whose parents do not share the same mother tongue. Two bilingual families have taken part in my experiment and inboth cases the fathers are native speakers of the English language, whereas the mothers are Czech native speakers. None of the children (participants) have lived in an English-speaking country and the only contact and exposure to native English has been through their fathers and close family members who still live abroad.

Linguists have often been interested in how two languages interact within an individual language user. Many case studies have proved that children growing up in bilingual families are able to learn both languages successfully. According to Werker and Byers-Heinlein's "Bilingualism in Infancy"(2008), bilingual infants have two separate phonological systems from the very beginning. However, these two systems influence each other. Bilingual infants simultaneously encounter similar phonetic segments from two different languages which have different distribution. Later, adult bilinguals who acquired both their languages are successful at discriminating phonetic differences between both, although they better perform in their dominant language. Werker and

Byers-Heinlein's study (2008) has also shown that bilingual infants are better at phonetic discrimination of a non-native language, unlike monolingual children, which is important for the development of their future language.

The purpose of this study is to analyse the production of initial voiceless stops /p, t, k/ and their VOT in both Czech and English words.The aim is not to examine bilingual production in either L1 or L2 but to determine whether during code-switching, bilingual children can switch completely between their two languages or whether the code-switch will be influenced by one of the languages. The bilingual speakers will be placed in a situation in which they will need to combine use of both their languages in order to invoke the interaction of the languages. I prepared a short questionnaire, in order to elicit information about the participants. Then, I recorded children's speech samples while they were telling a story and these samples helped me distinguish possible differences in their use of the Czech and English language.

Previous studies have analysed VOT in late bilinguals or L2 learners who started learning English after the age of 6 years. As there are many aspects affecting the L2 foreign accent, which I am going to elaborate on in the next chapter, I was interested atlooking into early bilinguals and how they have possibly been influenced by those variables.

2 Influences on L2 foreign accent

2.1 Critical Period and Age

Studies on L2 phonology have to deal with transfer of one's L1 on their clumsy L2. This influence depends on many factors. One is the age of L2 learning, which is closely connected with the "critical period". This term defines the period during which learners of an L2 have the ability to master a second language. (Piske et al. 2001) According to several researchers (e.g., Fathman 1975, Seliger 1978, Walsh&Diller 1981, Hurtford, 1991) different stages of the critical period exist.Those stages also affect to what extent a learner manages to develop a native-like pronunciation. In general, "the earlier in life one learns an L2, the better it will be pronounced." (Piske et al.)During the critical period learners don't have to learn a language mechanically but a mere exposure to the language will be sufficient to become fully fluent and native-like in an L2. (Lennenberg 1967) Although adults and adolescents have shown much faster development in L2 acquisition, mainly because of morphological and syntactic demonstration, after some time children manage to catch up with adults and outperform them. (Gass&Selinker 2006, Snow&Hoefnagel-Höhle 1978). Children up to the age of 6 are able to become fully bilingual, meaning that they are highly likely to acquire the phonetic systems of both an L1 and L2.

According to Eimas, Siqueland, Jusczyk and Vigorito (1971) infants have the ability of categorical perception, which means that they can distinguish most of the segmental contrasts and minor differences in sounds of languages all around the world. Nevertheless, Piske also claims that, "no study has provided convincing evidence for the claim that L2 speech will automatically be accent-free if it is learned before the age of about 6 years and that it will definitely be foreign-accented if learned later after puberty."

Flege (1991) claims that children who take up L2 before they turn 5 are able to create two complete separations of two different phonetic systems. "Early L2 learners may have an enriched phonetic system that includes all phonetic categories possessed by native speakers of the L1 and L2." Nevertheless, Grosjean (1982) is of a different

opinion. Their assumption is that the language systems of bilinguals will never be completely separated because both systems are said to be activated all the time, at least to some degree. (Flege 1991)

Ellen Simon (2009) focused on VOT and sound realisation in her study of sequential early bilingual speakers of English and Dutch and she came to the conclusion that between ages 3.0 and 4.0, the child's L1 system can still easily change as the result of exposure to an L2. Therefore, it can be claimed that a child's phonetic system is very flexible and easily influenced by a foreign language in which the child is immersed. The age of exposure to two different phonetic systems thus plays an important role. Deuchar and Clark's (1996) study also discovered that when there are two languages differing in VOT setting,simultaneous early bilingual speakers can acquire the system contrasting voiced and voiceless stops in a language that has aspirated consonants before the one with unaspirated consonants. "Laryngeal contrast between obstruents in languages with short lag – long lag contrast is generally produced at an earlier age than in languages with a voicing lead-short lag contrast. English-speaking children have reported to acquire the contrast between voiced and voiceless stops at around age of 2.0."(Macken and Barton 1979, Snow 1997) Children learning a voicing language acquire the contrast between pre-voiced and short-lag VOT at around the age of 3.0 or even later.

2.2 Length of Residence

Another important aspect is length of residence (LOR) where an L2 is used. Flege (2007) points out that the participants who arrived in a foreign country as young children are prone to become L2 dominant whereas the people,who arrived in a foreign country later, in their early adulthood, incline to remain dominant L1 users. However, LOR is a rather controversial aspect as Oyama (1976) or Thompson (1991) do not agree with Flege&Fletcher (1992), Asher&García (1969) or Purcell&Suter (1980) that LOR influences the degree of L2 foreign accent. Having conducted several studies, Flege et al. (1995b) and Meador (2000) came to the conclusion that LOR can influence the degree of foreign language only when the learners are in the early stage of learning. Experience is a

determining factor of any further influences on accent. Once an experienced learner moves to the country where an L2 is spoken, the degree of an L2 foreign accent does not tend to change.(Piske et al.)

2.3 Language Dominance

The input of bilingual children differs in comparison with monolingual children. As stated in V. Yip and Stephen Matthew's research study (2006), monolinguals have an input which they take as it comes, however bilingual children have their input space divided and thus the balance of the input is very important. "When the input is less than balanced, one of the two languages may develop faster or show greater complexity at a given age. This language is said to be dominant." (V. Yip and Stephen Matthew) Baker and Jones (1998) observed that "in the majority of bilinguals one language is more dominant than the other."

According to Romaine (1995), dominance is very changeable and the two languages that bilinguals speak can also change their dominance pattern, which depends on the extent of exposure to both languages. The older a child grows, the more difficult it becomes to provide him with approximately the same amount of exposure of both languages.

The subjects chosen for the present study had been exposed to the English language at home a lot, however,in the kindergarten, in shops, among their friends they spoke Czech most of the time, which has definitely influenced their dominance. During the recording session, one of the subjects struggled to switch between Czech and English even though he had spoken to me in Czech before we started recording, nevertheless, another subject was reluctant to speak Czech to me after she'd discovered that I can speak English. And thus, this is one of the pitfalls of working with children - once they start to feel any pressure, they get very obstinate and it is difficult to evoke the natural atmosphere again.

2.4 Amount of Native Language (L1) Use and Realisation of L2 Sounds

According to Flege et al. (1999) the amount of the L2 language use can be an important predictor of L2 foreign accent as it decisive whether the amount of an L2 use is higher than an L1. Thompson (1991) concluded in her study that "a difference must be noted between subjects who have maintained their mother tongue and those who have lost it when it comes to estimating accent retention in the second language."

Nevertheless, another aspect influencing the L2 foreign accent is the ability to realise different sounds occurring in an L2. In the study by Flege and Eefting (1987), the useof word-initial stops /p, t, k/ is inefficient in L2. Non-native speakersfail to produce the stops which would match the L2 stops, because they have a tendency to produce L2 sounds "via the nearest possible L1 category." (Flege 1987) L2 learners have problems with sound realisation when the two sounds are too similar and thus it is hard to make a distinction. And therefore, as in Selinker's study (1972) L2 learners are not capable of direct substituting or using sound for the L2 inventory, but they take on a form of an intermediate quality to the L1 and target L2. If L2 learners do not establish L2 phonetic categories, they will not produce the authentic L2 VOT values. There are cases when L2 learners established new phonetic categories but did not realise them yet, or they realised them differently owing to L2 input from non-native speakers.

Other variables influence L2 foreign accents to some extent e.g. gender, formal instruction, motivation or language learning aptitude, butthese factors are secondary. Whiteside and Marshall (2001) compared production of English stops in 7-year-olds, 9-year-olds and 11-year-olds. The results show that at the age 11, the phonological contrast between /p b/ and /t d/ was more distinctive in girls than in boys.

3 Czech and English stops

3.1 Czech stop consonants

The Czech voiceless plosives /p, t, k/arealways unaspirated regardless of the environment in which they occur and their VOT is about zero. Negative VOT can be found only in the Czech voiced stops /b, d, g/ which are the counterparts of the voiceless stops and are characterized by the production of prevoicing. (This means voicing begins before the release of a stop consonant – VOT has negative value) (Vanlocke 2011).Because the Czech language has almost no aspiration, its native speakers are not sensitive to it and therefore it is interesting to observe this phenomenon in bilingual children to see how they manage code-switching.

3.2 English stop consonants

The English voiceless consonants /p, t, k/ show variation between aspirated and unaspirated allophones, and therefore English is regarded as aspiring language. (Yavas 2009) The English voiceless stop consonants are aspirated when they are syllable-initial. Aspiration is a phonetic feature, hence an omission of the aspiration does lead to a change of meaning. As the English stops have the same place of articulation, aspiration has a certain value of differentiation of meaning. In Ellen Simon's study (2009) it has been explained that "English contrasts short-lag with long-lag stops". English voiced stops are not typically pre-voiced but they are classified as short-lag. To sum up the difference, in the initial stressed position Czech /b/ is realised as prevoiced [b] and /p/ as unaspirated [p]; English /b/ can be realised as prevoiced [b] or unaspirated [p] and /p/ is aspirated [p^h].

3.3 Voice Onset Time (VOT)

Although voiced and voiceless stops /b, d, g, p, t, k/ are one of the most common sounds in language, they differ with regard to the acoustic value known as VOT , which is "the time that elapses between the release of the articulators for a stop and the onset of vocal cord vibration of the following segment." (Yavas 2009). VOT is considered to be one of the most effective means of measuring and comparing the degree of L2 foreign accent and interlanguage. The VOT continuum is divided into three general groups with respect to the difference in voicing. These groups are: voiced, voiceless aspirated and voiceless unaspirated stops.Voiceless aspirated stops have positive VOT and are produced with a long-lag as the onset of voicing follows the release of the stop.In the 1960s the first phonetic indicator was introduced. This indicator was able to differentiate voiced and voiceless unaspirated stops and called VOT. Ladefoged (2001) adds that "the easiest way to visualise VOT is by reference to the waveform of a sound, it is measured in milliseconds (ms) from the spike indicating the release of the stop closure to the start of the oscillating line indicating the vibrations of the vocal folds in the vowel." However, VOT is negative in voiced stops because vocal cords start vibrating before the release.The average VOT value of English voiceless unaspirated (long-lag) is greater than 35milliseconds, whereas voiced unaspirated stops are less than 30-35ms. (Yavas)Combination of voicing and aspiration creates a system made of four homorganic stops.

The latest studies have shown that VOT is not only an indicator of the difference among languages but also among dialects or foreign accents. John Hansen and col. demonstrated that VOT can also be used as a variable (= parameter) for detecting of a foreign accent in English spoken by Chinese, Indians andAmericans (Hansen *et. al.*, 2010)

Flefe&Efting, (1987), Fowler, Sramko, Ostry, Rowland, & Halle (2008) reported that bilingual speakers do not manage to match the VOT values of monolingual speakers of one or both languages when the difference in VOT setting occurred or, according to

Kang& Guion (2006), they succeed to match the VOTs of monolinguals in both languages. When it comes to the question of separate phonetic categories in bilingual speakers, VOT is the conclusive evidence.

Antoniou's study (2010),focused on Greek-English bilinguals, it has been concluded that although sequential early bilingual speakers have acquired separate phonetic systems, there is a partial L1 interference on their L2, which is still acceptable according to Beach et al. (2001) In some cases it has been reported that non-native speakers had a tendency to "overcompensate for the VOT differences between native ad target language by exaggerating a target language attribute." (Gass 1984)

3.3.1 VOT deviations in children and adults

Andrea A. N. MacLeod and Carol Stoel-Gammon's study (2009)found that "early bilingual speakers maintain monolingual-like phonemic contrasts but they exhibit more variation within categories than monolingual speakers."

Lim and Watson (2002) conducted a long-term experiment comparing adult and children's stop production in the word-initial position. It has been discovered that children's and adults' VOT values differed, especially with reference to voicing. Voiceless word-initial stops have shown longer VOT values in children than in adults. Voiced word-initial stops were, however, of very similar value. These findings haveconfirmed Ohde's study(1985), which found that although children's and adult's voiceless word-initial stops had similar overall VOT patterns; nevertheless children's values were greater in comparison with adults.

Laura Koenig (2001) sums up the findings on VOT acquisition in children by saying that various studies agree on the fact that children reach the same speech values characteristic for adult speakers relatively late (English voiceless unaspirated stops). She also claims that the results of her study show higher variability of VOT between 5-year-olds and adults, but no differences in mean values. Zlatin's study (1972) has found that 2-year-old children did not show any great differences compared with adults, but the

difference was notable in 6-year-olds. It leads to the conclusion that the non-normality in VOT values may occur at some point of childhood.

4 Practical Part

4.1 Introduction

The practical part of my study is based on the acoustic experiment during which three simultaneous bilingual children were recorded. This chapter presents background information about the participants and their families, discusses all the factorsinfluencing VOT values, describes how the experiment was performed andhow the VOT was measured.

The recorder used for the purposes of this study was a Zoom H4n Handy Recorder. The data wasthen downloaded to my laptop and transcribed.The sound analysis is based on the spectrographic and waveform analysis made in PRAAT programme. The initial intention of the experiment was to obtain data from children's story telling. Two picture stories(Meyer 1969 and 1971), with the same main characters were used for the experiment. The children had been acquainted with the characters occurring in the stories before the recording started. They were aware of the fact that they were being recorded and thus the children's speeches may not be thoroughly natural. Both sessions differed in the way the participants were instructed and therefore each session will be described in detail in separate chapters.

All the instances of /p, t, k/ in the recordings were divided into four groups depending on the factors influencing the environment the voiceless stops occurred in. Those factors werea language and a mode. The languages the children switched between were English and Czech; however the sounds of the individual languages were influenced by two modes – monolingual and bilingual. In the monolingual mode, there are instances in which subjects speak in only one language without a code-switch, whereas in the bilingual mode, the subjects interacted between two languages and also two phonetic systems. For those measurements, a table comparing the data from individual environments and modes was created. I was interested in finding out whether the VOT values depended on just one language regardless of the mode or whether they differed when influenced by those factors. The hypothesis is that the mode has a great impact on

the quality of the VOT. Thus in the English bilingual mode, the VOT values are supposed to remain similar to the English monolingual mode – aspiration should be present in the voiceless word-initial stops. Nevertheless, the Czech word-initials should not show very low VOT values in both the monolingual and bilingual mode.

4.2 Participants

I attempted to find children of approximately the same age - 5 years old, who come from similar backgrounds and donot differ in the amount of exposure to both Czech and English. Another factor I wanted to maintain was that the children would still be in the critical period, which means that they would beable to perceive and copy the sounds around them exactly.

Since it was rather difficult to find simultaneous Czech-English bilingual children, I only managed to do recordings with 2 children (S1, S2), differing in gender. Both of these children have a younger sibling (S3, S4), who are both 3 years old. I attempted to record the speeches of the younger siblings as well, but due to their rather low speaking skills and improper pronunciation,only some data was usable.

S1 is a girl aged 5, whose father comes from the United States, and her mother is from the Czech Republic. The mother had lived in the United States for 6 years with the father. Nevertheless, before the children were born, the parents had moved to the Czech Republic. The father understands Czech but speaks exclusively English, whereas the mother speaks to girls mostly in Czech. They have an older step sister, who is an American living in the Czech Republic with them. She is 22 years old and although she has a basic command of Czech, she speaks it only when necessary. Both girls attend kindergarten where they are exposed to the Czech language. Generally, it could be said that the approximate extent of the exposure to both languages is the same, although the exposure to the English language is slightly bigger, mostly due to communication with their older sister.

S2 is a 5-year-old boy, whose father is British and the mother is Czech. They have never lived in the United Kingdom although they visit England on a regular basis every

year for approximately 3-4 weeks. Both of the boys attend a Czech kindergarten as well. Their father understands Czech but he prefers to speak English to them. The mother speaks alternately both in Czech and in English to them. According to the questionnaire, the children incline to communicate in Czech, however, they are able and willing to react in both languages depending on which language a speaker uses. The parents detected some L2 foreign accent differences in S2, however, after a while spent with other British children, his accent improved significantly.

4.3 Session 1

The experiment comprises two recording sessions, each with different participants as the families live in different parts of the Czech Republic. The first session was with the American girls (S1 and S3).

4.3.1 Before the recording (1)

Due to the fact that the girls did not know me at all, we spent several hours together getting to know each other.In order to "break the ice", and to make them believe that I speak very little English,their American sister, with whom I spoke Czech, accompanied us. This also contributed to creating a friendlier and most importantly bilingual environment.

Before the recording began, I familiarized the girls with the characters appearing in the storiesand showed them how the recorder worked. The main criterion was that the names had to begin with voiceless stops /p, t, k/, in order to measure any possible VOT values. In a Czech narrative, English names had to be used and vice versa. If aspiration appeared in Czech words/ names, it would disprove the assumption that bilingual speakers can interact in both languages at the same time.In the end, it was necessary to make a few changes to the names because the participants did not like them and kept using names beginning with any letter but voiceless stops. The instructions to the first

story were given in Czech and the children were asked to re-tell the story to their older sister in English. The second story was narrated by a native English speaker in English (with English names) and the girls were supposed to re-tell it in Czech.

4.4 Session 2

The second recording session with the Czech-British family was scheduled two weeks after previous session.

4.4.1 Before the recording (2)

I prepared exactly the same names and stories asfor session 1. Because we were time-limited,I could not spend as much time with the Czech-British boys as with the previousparticipants. Shortly after the first encounter, the boys were shown the stories and the instructions were explained to them. The same problem as in previous session occurred; the subjects,or rather one of them,[1]did not like the names chosen for the purposes of the experiment. Nevertheless, at least some of them could be used and are captured on the recordings. The list of the names and words can be viewed in Table 5.1 – 5.3.

4.5 VOT Measurement

VOT was measured in the acoustic programme PRAAT 5.353. Waveforms were used to detect VOT and, if present, measure its quality.In this chapter I will demonstrate the differences between the waveforms of Czech and English voiceless word-initial stops.

[1] The other subject was too shy to take part in the experiment. With regard to his age (3) his speaking skills and rather poor pronunciation, it would not be possible to use for the purposes of the thesis.

Figure 4.1 is the example of aspiration in an English word*puppy* used in the monolingual mode. VOT is measured after the burst and before the onset of voicing, which is the beginning of the following sound. The burst is the result of releasing astop closure and is followed by "small semi-random variations during the aspiration." (Ladefoged 2001)In Figure 4.1, the VOT is 59ms, which means that /p/ falls into long-lag.

Figure 4.2 shows the waveform of the Czech word *padat* also used in the monolingual mode. As mentioned in section 3.1, Czech voiceless word-initials are not aspirated and thus their VOT is near zero.In this instance, the VOT is 6ms, and therefore the aspiration is inaudible.

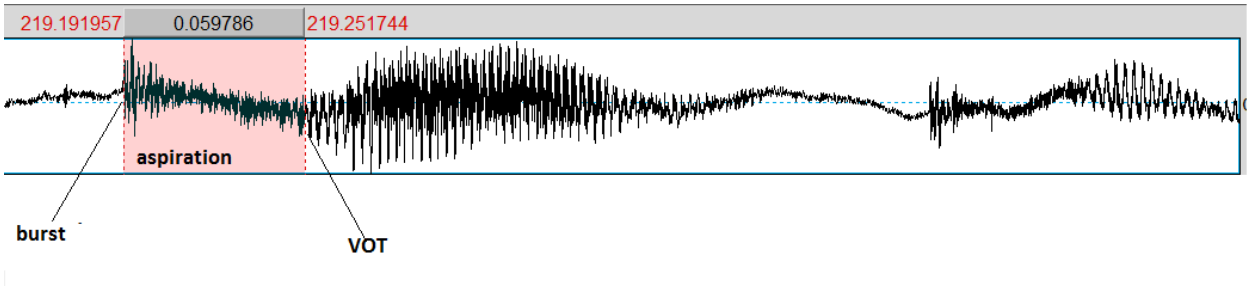

Figure 4.1. Waveform of the word *puppy*.The English voiceless word-initial word is pronounced by S1 and has been recorded for the purposes of this study.

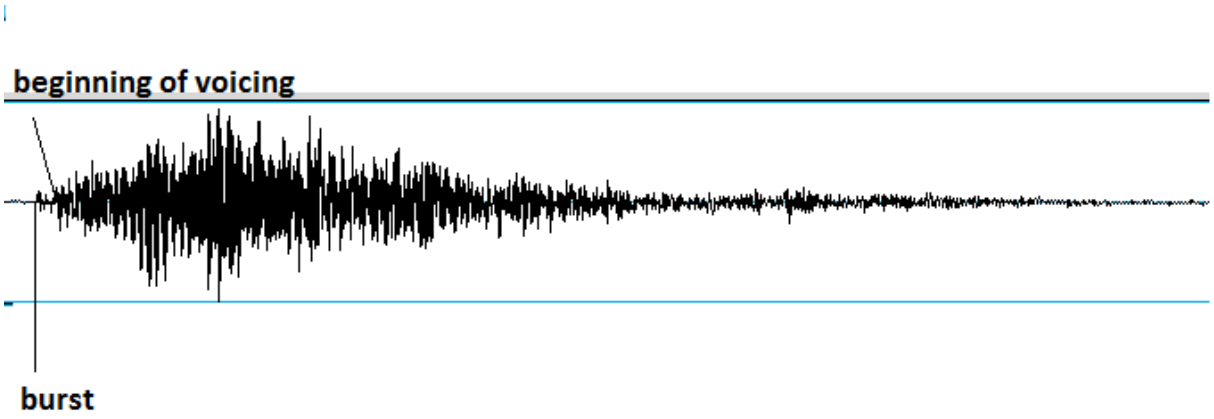

Figure 4.2.Waveform of the word *padat*.The Czech voiceless word-initial word is pronounced by S1 and has been recorded for the purposes of this study.

5 Data Analysis

5.1 General Analysis

The collected data has been divided into sections (See Tables 5.1 – 5.3) according to the language and mode that were being used at the time of speaking. There are two types of modes because the subjects switched between Czech and English and used words from one language in the environment of the other.

In the Czech bilingual mode, the subjects spoke Czech with some English words inserted. In the English bilingual mode, this was reversed: the primary language was English, but with some Czech words spoken. In some instances the subjects switched the languages naturally in their speech, but other times they were asked to use code-switching on purpose. Due to a few complications, such as unwillingness to tell a story or use the given names, all the words beginning in /p, t, k/ have been included for the data analysis.

S1 - Mischa

Language	**English**	**Czech**
Mode	Monolingual: 88 instances	Monolingual : 73 instances[2]
Mode	Bilingual : 9	Bilingual: 6

Number of the recording	**English monolingual**	**English bilingual**	**Czech monolingual**	**Czech bilingual**
STE_006	puppy (2x)*57ms;36ms*			

[2] Since S1 and S2 did not have a 'fixed' pronunciation for the names *Patrik /Patrick* and *Petron*, it was thus difficult to decide which language they belonged to. I decided to match the names with a mode according to the sound the subjects produced. e.g. When the names had a neutral VOT quality, it was matched with a Czech monolingual mode.

Number of the recording	**English monolingual**	**English bilingual**	**Czech monolingual**	**Czech bilingual**
STE_006	told *75ms*	Kája *35ms*		
	part *46ms*	Pája *1ms*		
	can *29ms*			
	turn *70ms*			
	page *12ms*			
	puppy *32ms*			
	caught *180ms*			
	come *60ms*			
	turn *46ms*			
	page *14ms*			
	puppy *32ms*			
	tree *58ms*			
	puppy *24ms*			
	puppy *54ms*			
	tree *103ms*			
	put *71ms*			
	page *44ms*			
	told *105ms*			
STE_010	can(2x) *40ms;40ms*			
	king(2x)*45ms; 93ms*			
	queen *105ms*			
STE_011	time *115ms*		konec *30ms*	
	crown *107ms*		která *25ms*	
	pointed *111ms*		kterej *22ms*	
	told *4ms*		korunu *8ms*	
			pak *1ms*	
			kytičce *30ms*	

Number of the recording	**English monolingual**	**English bilingual**	**Czech monolingual**	**Czech bilingual**
STE_016	can *30ms*			
	pick (2x) *49ms;31ms*			
	clothes (3x) *45ms;107ms; 61ms*			
	call *60ms*			
	pizza *52ms*			
	Kelsey *75ms*			
	came *36ms*			
	come (4x) *80ms; 37ms;50ms;80ms*			
STE_017	classes *75ms*			
	princess (2x) *105ms; 70ms*			
	play *25ms*	Kája *29ms*	kamarádka -	
	playing (2x) *50ms; -*	Kája *36ms*	Kája *20ms*	
	piggy *37ms*	kostel *15ms*	kluk *31ms*	
	princess *50ms*		princezna *26ms*	
	piggy*58ms*			
	princess(2x) *36ms; 18ms*			
STE_018	Kelsey *61ms*		Petron *0ms*	
	can *50ms*		pořád *2ms*	
	Patrick -	teď *20ms*	tak -	Kelsey(4x) *99ms;61ms;61ms; 33ms*
	Petron(3x) *67ms;50ms;36ms*	ty *15ms*	pláž *2ms*	Kelsey *13ms*
	Kelsey *81ms*	prosím *20ms*	kamarád -	Kheyla -
	come(2x)*43;54ms*	tebe *1ms*	plavala -	

Number of the recording	**English monolingual**	**English bilingual**	**Czech monolingual**	**Czech bilingual**
STE_018	Patrick *42ms*		peníze – ms	
	Kelsey *122ms*		Petrone (3x) *0ms, 40ms;10ms*	
	Patrick *95ms*		pomoc (2x) *–ms;-ms*	
	together *41ms*		plavat *10ms*	
	call -		pospíšíme *20ms*	
	Petron *10ms*		půjdeme (2x) pod *0ms,0ms 30ms*	
	Patrick *81ms*		prosím *38ms*	
	Petron (6x) *75ms;-;26ms;30ms;26ms;-*		tady *4ms*	
	tired *150ms*		Petrone (2x) *–ms;-ms*	
	Kelsey (7x) *60ms; 58ms;50ms;21ms;70ms;215ms;67m;s*		pojďte *13ms*	
	can (2x) *40ms; 46ms*		peníze *–ms*	
	play *70ms*		Patriku (4x) *-ms,-ms,-ms*	
			pojď (2x) -	
			potřebujeme (2x) -	
			ty půjdeš -,-	

Number of the recording	English monolingual	English bilingual	Czech monolingual	Czech bilingual
STE_018			Petrone (4x)	
			tady (2x)	
			posloucháš	
			tvýho (2x)	
			tátu (4x)	
			tatínku (2x)	
			taťku	
			prosím (2x)	
			kupovat	
			kdyby	
			příšera	

Table 5.1. Data collected from S1. The chart is divided according to modes and numbers of recordings. The VOT qualities of particular instances have been put into the chart as well.

S2 – Oliver

Language	**English:**	**Czech:**
Mode	*Monolingual:31*	*Monolingual: 7*
Mode	*Bilingual: 8*	*Bilingual: 1*

Number of the recording	English monolingual	English bilingual	Czech monolingual	Czech bilingual
STE_023	two[3] times VOT : times *100ms*			
	tree:-			

[3] The production of the word *two* was accompanied by the voiceless palate-alveolar fricative.

Number of the recording	English monolingual	English bilingual	Czech monolingual	Czech bilingual
STE_026	twinkle (4x) *76ms; 56ms; 32ms; 37ms*			
STE_027	trees -			
STE_028	trees-			
	part *86ms*			
STE_030	pictures *38ms*			
STE_032	quietly *85ms*	Kája *100ms*		
	pieces *36ms*	Kája *69ms*		
	trees -	Kája *79ms*		
	tree -			
	climbed *70ms*	Kája *74ms*		
	tree -	Kája *75ms*		
	two *83ms*	Kája *212ms*		
	put *27ms*	Pája *46ms*		
	time *14ms*	Pája *34ms*		
STE_034	Pete *60ms*		pak -	Pete*154ms*
	Cami *32ms*		kousla *60ms*	
	Cami -		kluk*30ms*	
	Pete *26ms*		pejska*5ms*	
	Pete *105ms*		proti -	
	Pete*122ms*		pak -	
	killed *130ms*		pak -	
	keep(3x)*129ms;160ms;200ms*			
	today *44ms*			

Table 5.2. Data collected from S2. The chart is divided according to modes and numbers of recordings. The VOT qualities of particular instances have been put into the chart as well.

S3 – Isabella [4]

[4]Did not participate in the story-telling part of the experiment, therefore the amount of the data collected from this subject is lower than in S1.

Language	**English**	**Czech**
Mode	Monolingual: 26	Monolingual:13
Mode	Bilingual: 0	Bilingual: 0

Number of the recording	**English monolingual**	**English bilingual**	**Czech monolingual**	**Czech bilingual**
STE_016	Can *243ms*			
	can't *240ms*			
	come *30ms*			
	can't *106ms*			
	penguin(2x) *34ms; 26ms*			
STE_017	puppet (3x) *10ms;5ms;5ms*			
	princess (2x) *35ms,-*			
	play *132ms*			
	tummy *90ms*			
	pig *78ms*			
STE_018	can't (4x) *66ms; 55ms; 60ms; 41ms*		pláž -	
	can (2x) *25ms; 36ms*		tady *10ms*	
	Kelsey (3x) *86ms; 34ms; 36ms*		koukejte *15ms*	
	Petron *67ms*		pak *6ms*	

Number of the	**English monolingual**	**English bilingual**	**Czech monolingual**	**Czech bilingual**

recording				
	Patrick -		tam *9ms*	
	take *8ms*		tady *8ms*	
			peníze (3x) -	
			tátu -	
			pryč -	
			půjdete -	
			tři -	

Table 5.3. Data collected from S3. The chart is divided according to modes and numbers of recordings. The VOT qualities of particular instances have been put into the chart as well.

5.1.1 Subject 1 – Data analysis

There is no great difference between the monolingual modes, as both languages were used to approximately the same extent. However, the number of instances in the bilingual modes is significantly lower. This is because the subject used pronouns instead of names when narrating the stories. Although several names were used, they were either English names used in the English monolingual mode or Czech names in the Czech monolingual mode. The total number of all the tokens used by S1 is 177.

In the transcription of the S1's speech, which can be found in Appendix 2, it is clear thatthe voiceless stop /k/ was used most often in the English monolingual mode. The total number of tokens in this mode is 88,/k/ was present in 39 of these. There is just one case in which aspiration was around 0ms and thus imperceptible. Only two instances show VOT lower than 30ms - the average length of VOT in a voiceless velar stop is 76.7ms. Voiceless alveolar stops were used in 10 cases. In only one instance was VOT zero, but there were two instances in which VOT was lower than 30ms. The average VOT in /t/ is 66.7ms. Voiceless bilabial stops have been present in 39 instances of the English monolingual mode. In three of them, VOT was zero, and eight instances did not exceed aVOT of 30ms. The average VOT for /p/ was 42ms, which is the lowest average of all the voiceless word-initial stops occurring in the English monolingual mode.

According to Table 5.1, 73 instances of voiceless word-initials appeared in S1's Czech monolingual speech. This is low in comparison to the English monolingual mode. However, given the fact that S1's step-sister - who speaks English most of the time - was present in the room at the time of recording, it is likely that S1 wanted to make sure her sister would understand. It can therefore be considered a success that she used Czech to a similar degree to her English. Voiceless bilabial stops appeared most often in this mode, 41 times in total. More than half of the words beginning in /p/ are names, which were used in both languages, but it was rather difficult to decide whether they were originally Czech or English words. VOT was zero or very low (up to 20ms) in all but two instances, which reached a length of 44ms. For this reason, the average VOT of /p/ is 4ms. The voiceless stop /t/ was present in 16 instances,but none of them reached VOT longer than 15ms. The average VOT was merely 1.6ms and was the lowest VOT for this mode. However, voiceless velar stops had the highest average VOT quality, reaching 12.7ms. Surprisingly, in 4 instances the VOT length was higher than 20ms but lower than 35ms.

Although the number of instances in the Czech and English bilingual modes is quite similar, the same cannot be said for the number of particular voiceless word-initials. In the Czech bilingual mode, there were no occurrences of voiceless bilabial and velar stops. All the English words emerging in the Czech environment beginning with /k/ showed quite high VOT, which was expected and thus confirmed a part of the hypothesis that bilingual speakers are likely to be capable of code-switching. Nevertheless, this conclusion cannot be taken too seriously as it is not supported by much data.

However, the English bilingual mode has brought rather surprising results. There are nine instances in which the average VOT of voiceless velar stop shows weakaspiration (29ms). But again, not even this conclusion can be considered reliable as there are very few instances. In voiceless bilabial and alveolar stops a VOT of higher than 20ms did not occur.

According to the results and the graph, it can be concluded that Subject 1 has acquired the phonetic systems of both the English and the Czech languages. However, it is very hard to make any statements regarding the ability of code-switching owing to the scarce instances.

	English monolingual	English bilingual	Czech monolingual	Czech bilingual
/k/	66.7	29	12.7	44.5
/t/	76.7	12	1.6	0
/p/	42	10.5	4	0

Table 5.4. Subject 1 (S1).Average lengths of VOT of English and Czech monolingual and bilingual modes based on the data collected during the recording session.

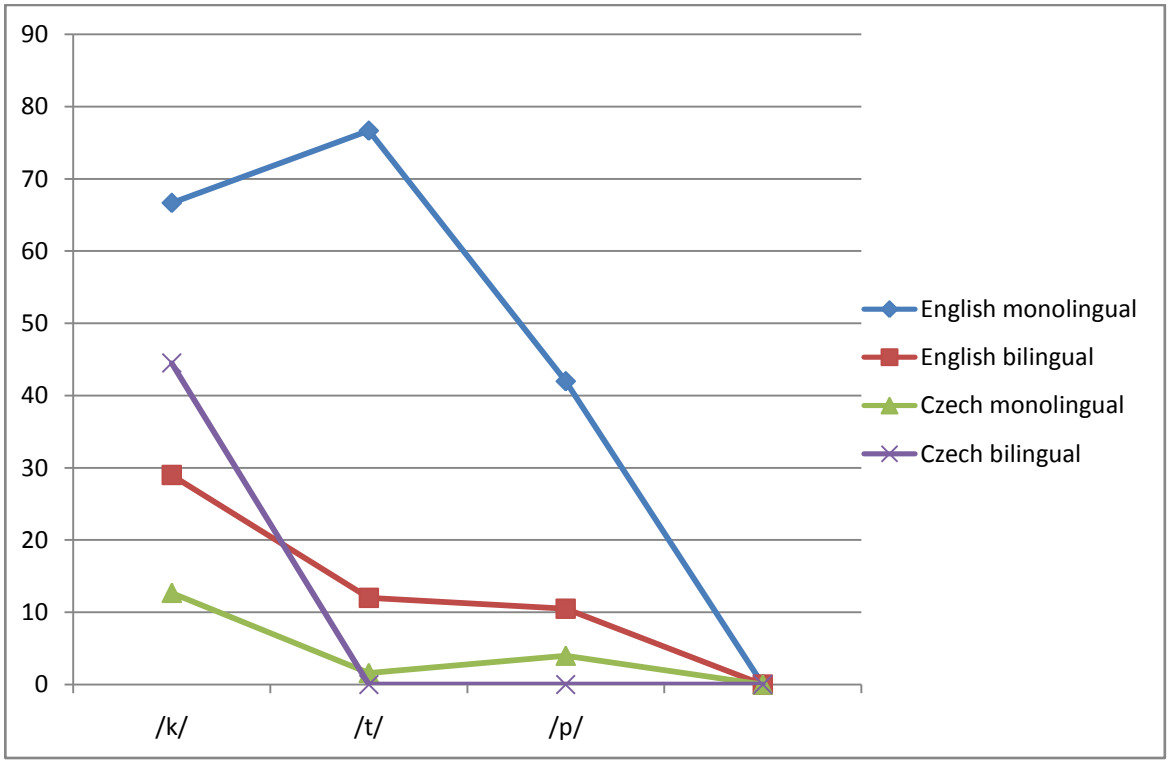

Figure 5.1. Graphic representation of the data from Table 5.4

5.1.2 Subject 2 – Data analysis

Subject 2 did not provide as much data as S1 and S3, mainly due to the fact that his brother was not engaged in this activity, and therefore Oliver did not have a companion to

conduct tasks other than a simple narration of two stories. For no clear reason, he struggled with switching from English to Czech, even though he had spoken to me in Czech without any problems before the recording started. Generally, he uses the Czech language to a greater extent, and therefore it remains unclear why he had those problems expressing himself in Czech during the recording. In the recordings, which can be found on the CD, it is apparent that Oliver got into difficulties when he spoke English as he was looking for the right expressions.

The total number of tokens that have been used in S2's speech is 47, which is three times less than the tokens taken from S1. Despite the lower number of tokens, S2 nevertheless had more instances in the English bilingual mode than other participants.

The English monolingual mode was activated the most. There are 31 instances of which the most used was a voiceless alveolar stop. The total number is 15 with an average length of 21ms. Althoughsome instances showed a moderate or strong aspiration, but due to the instances that were accompanied by the voiceless palato-alveolar fricatives, VOT qualities were impossible to measure. A bilabial and velar stop appeared in the same number of instances, which is 8, however, the average length of VOT differs. A voiceless bilabial stop /p/ showed an average VOT length of 62.5ms. There are no cases of zero VOT nor lower than 26ms. The highest VOT quality was122ms. The last remaining voiceless stop in this mode is /k/. This sound showed the most varying degrees of VOT quality of all the stops in all the modes. It ranges from 0 VOT quality to 200ms. Only two instances emerged in which VOT was between 0 and 32. Other instances showed very high VOT quality of between70-200ms. Therefore the voiceless velar stophas also reached the highest average VOT quality - 100.75ms.

The English bilingual mode brought very unexpected results. First of all, I would like to point out the factin the English bilingual mode, Czech words are used. Thus, it tests the ability to code-switch and maintain the phonetic system of the currently-spoken language. The hypothesis for this mode is that the instances of Czech words have rather low VOT quality, and thus the stops will remain unaspirated.In this mode, the total number of tokensis 8, and there are no instances of the voiceless alveolar stop /t/. A voiceless bilabial stop occurred twice, with the average VOT being 40ms. In both cases VOT exceeded 30ms. A voiceless stop /k/ emerged in 6 cases and none of them was

unaspirated. The VOT quality ranged from 69 – 215ms, which is strong aspiration and therefore a striking result. The average VOT quality is 102ms demonstrating a very strong aspiration, which was not by any means expected.

In the Czech monolingual mode there are mere 7 tokens for the reason mentioned above. The voiceless alveolar stop /t/ was not used at all, and a voiceless velar stop was present in two instances. Its average VOT quality is 45ms as the VOT in both instances was 30 and 60ms. A voiceless bilabial stop occurred in 5 instances with an average VOT quality of 1ms.

As only one instance of a voiceless stop emerged in the Czech bilingual mode, this data can be considered misleading for the present study. The only token appearing in this mode was a voiceless bilabial stop /p/ which reached 154ms VOT quality. Although the data is unreliable and more data would be required to draw any valid conclusion, the results have shown that this subject (S2) has acquired aspiration for the English phonetic system, and the Czech voiceless stops are realised without aspiration. However, he has probably not developed the ability to distinguish these two different phonetic systems when they occur in the same context. Therefore, the code-switchingwas negative and thus the hypothesis has been contradicted in this subject.

	English monolingual	English bilingual	Czech monolingual	Czech bilingual
/k/	100.75	102	45	0
/t/	21	0	0	0
/p/	62.5	40	1	154

Table 5.5. Subject 2 (S2).Average lengths of VOT of English and Czech monolingual and bilingual modes based on the data collected during the recording session.

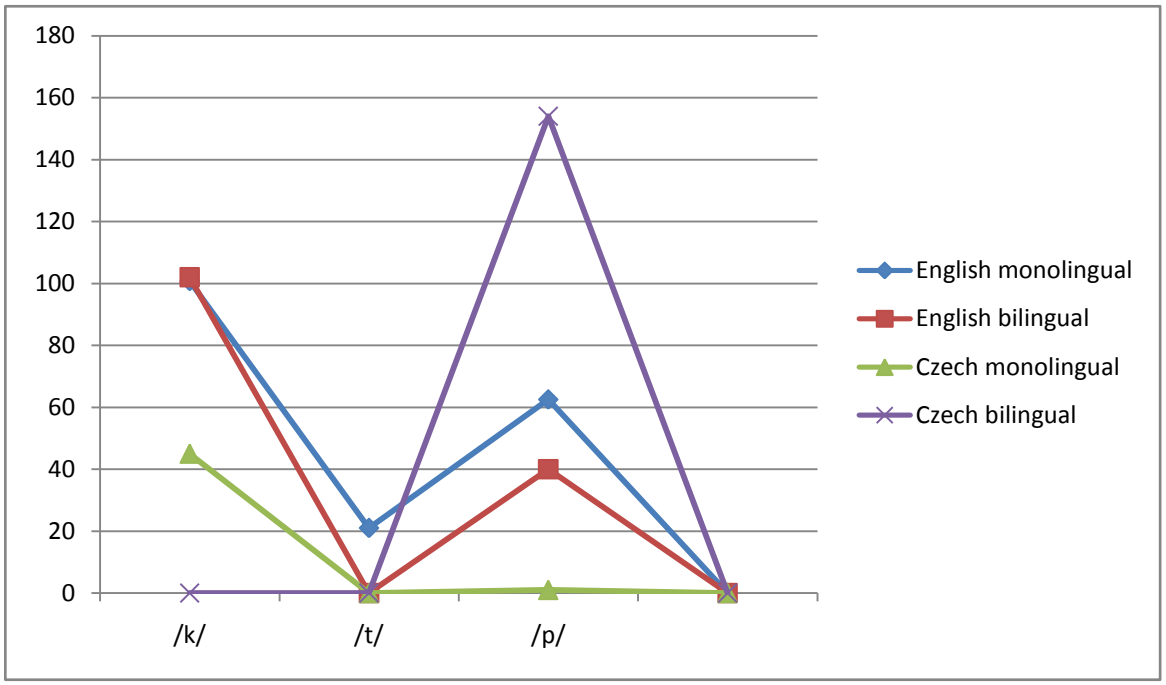

Figure 5.2. Graphic representation of the data from Table 5.5.

5.1.3 Data analysis – Subject 3

The last participant did not provide us with the data of the story narration. However,some data was collected during a game in which S3 interacted with her sister (S1). Considering the fact that she did not have to name any characters, it was less likely that S3 would use any names. Ultimately, she produced a few words containing voiceless word-initial stops. The total number of tokens that have been collected from S3 is 41 and the only data that is available is from monolingual modes. Although S3 used some names in her speech, she did not say them in the bilingual modes.

Generally there was more output for the English monolingual mode, 26 in particular. A voiceless alveolar stop was used in two cases with very varying data. The first instance showed a VOT quality that did not exceed 5ms. However, the other instance was of a positive VOT quality reaching 90ms. Although the average VOT quality is 47ms, it cannot be taken too seriously as there is a lack of data. A voiceless bilabial stop occurred in 11 instances and showed the average VOT quality reaching 34.4ms. In most

cases the VOT ranged between 5-35ms,but there were also two instanced of zero VOT. Nevertheless, the highest VOT quality was 132ms. The most instances were demonstrated by /k/ with a total number of 13. Positive VOT and thus aspiration was presentin all but one instance. There was a wide range of VOT quality among all the examples, going from 30ms to a very strong aspiration of 243ms. The average VOT was 81ms.

In the Czech monolingual mode only 13 cases of voiceless word-initials were observed. Contrary to the English monolingual mode, where voiceless velar stops occurred in the most instances, the phoneme /k/ was present in just one case with a VOT quality of 1ms. A voiceless alveolar stop emerged in five instances with an average VOT of 5.3ms. And lastly, there are seven cases of a voiceless bilabial stop. Despite the fact that this phoneme was used in the most instances in this mode it showed the lowest VOT quality. In all the instances, the VOT was slightly over 6ms.

As you can see in Table 5.6, S3 has acquired both phonetic systems and is able to distinguish between them. Nevertheless, due to the scarce data it cannot be concluded whether both systems are separate at all times, as the participant did not even attempt code-switching.

	English monolingual	English bilingual	Czech monolingual	Czech bilingual
/k/	81.3	0	15	0
/t/	47	0	5.3	0
/p/	34.4	0	1	0

Table 5.6. Subject 3 (S3).Average lengths of VOT of English and Czech monolingual and bilingual modes based on the data collected during the recording session.

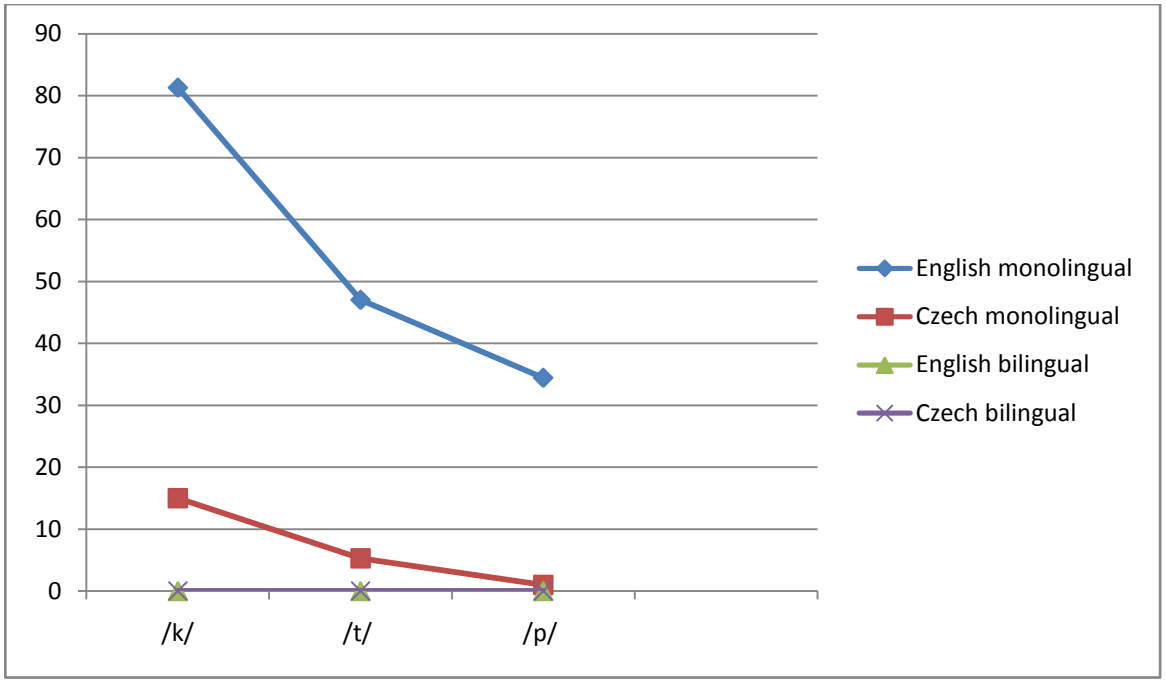

Figure 5.3. Graphic representation of the data from Table 5.6.

5.1.4 Data analysis conclusion

Although S3 did not use bilingual modes, it has been shown that all the participants have the highest VOT quality, and therefore aspiration occurs mostly in the English monolingual mode. An average VOT quality in the Czech monolingual mode did not exceed aVOT of 40ms and thus there was hardly any aspiration present. This result was expected and has proved that the participants of my study have acquired the phonological systems of both languages and are able to use both of them separately. Nevertheless, in bilingual modes the data from S1 and S2 are different. Not only with reference to the number of instances used in the bilingual modes – S2 produced only one instance of a voiceless initial in the English bilingual mode – but also because of rather significant differences in VOT qualities.

The data collected from S1 has confirmed both hypotheses, because S1 used both languages to the same extent and maintained the aspects of both languages, she did not mix them up. Furthermore, S1 did not show any crucial problems when she was given the task of code-switching. In most of the instances she used the appropriate voicing typical

for either language. Although there were a few instances of moderate aspiration present in the English bilingual mode, the vast majority of words used in the same mode were of a very low VOT quality.

S2 provided only one instance of an English word in the Czech bilingual mode and therefore it is nearly impossible to draw any conclusions concerning this mode. However, S2 showed from moderate to rather strong aspiration in the English bilingual mode. The VOT averages ranging from 40ms to 102ms and therefore they are considered aspirated. These results deny the hypotheses discussing code-switching and acquisition of both phonetic systems. Because aspiration occurred in the Czech monolingual mode in the voiceless velar stop /k/, it points to the fact that aspiration might be easier to use for S2. This has been discussed in Deuchar and Clark's (1996) study in detail (See 2.1).

5.2 Comparing particular instances - Further Analysis

In this chapter, I will analyse instances which occurred in the speech of at least two subjects. Doing this will allow me to compare similar aspects of language use most effectively.

5.2.1 Comparisons – The Voiceless Velar Stop

First of all, I want to begin by comparing instances of the same words used in the bilingual modes. Each instance was used by a different participant, and this analysis should provide us with a detailed insight into the data and any difference that may have occurred.

The first word I am going to focus on is the Czech name *Kája*occurring in the English bilingual mode. For this reason, it was expected that no or very weak aspiration would be present. As you can see in Figure 5.4, S1 produced a VOT of 35ms, which is regarded as a weak aspiration. Therefore, it can be said that S1 is able to differentiate and maintain the aspects of voicing and aspiration, which differ in either language. The VOT

length of /k/ in the name *Kája* in the English bilingual mode did not differ significantly in all the instances and therefore the instance chosen for the analysis in Figure 5.4is random.

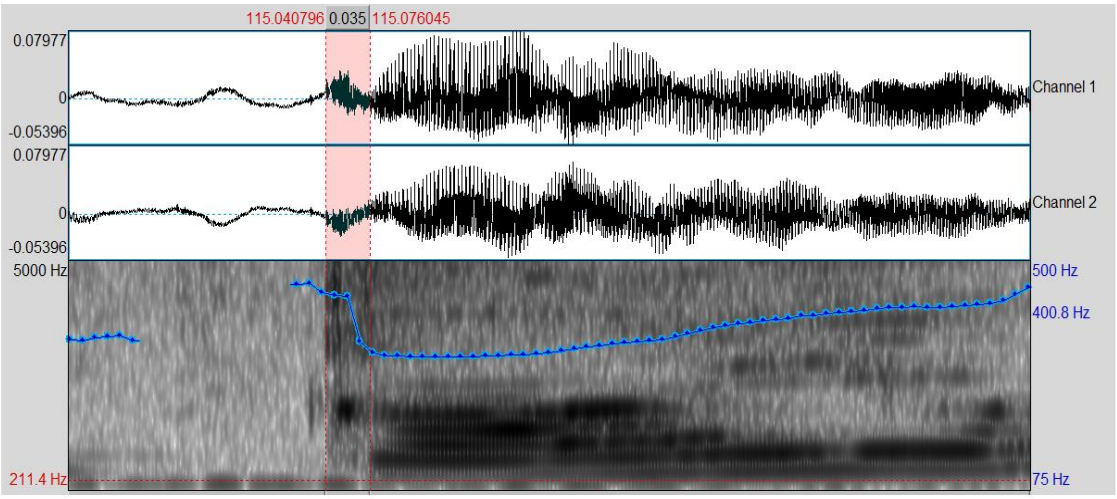

Figure 5.4. The waveform and spectrogramanalysis of the first syllable /ka:/ in the Czech name *Kája*occurring in the English bilingual mode produced by S1. The red stripe demonstrates the length of VOT. It ismeasured from the burst to the beginning of voicing.

In Figure 5.5, you can see the detailed analysis of the same word emerging in the same mode as in Figure 5.4. However, this instance was produced by S2. This subject generally showed a much greater length of VOT in voiceless velar stops which occurred in the same environment as S1. The average VOT of /k/, in all the instances of the name *Kája*present in the English bilingual mode, was 102ms. For this reason, I have chosen the instance which is the closest to the VOT average. The instance in Figure 5.5 has the VOT of 81ms.

The comparison of Figures 5.4 and 5.5 shows that S2 has not acquired the phonetic system of both languages completely. He produced the voiceless velar stop in all instances of the name *Kája* in the English bilingual mode with moderate or even very strong aspiration. These results contradict the hypothesis.

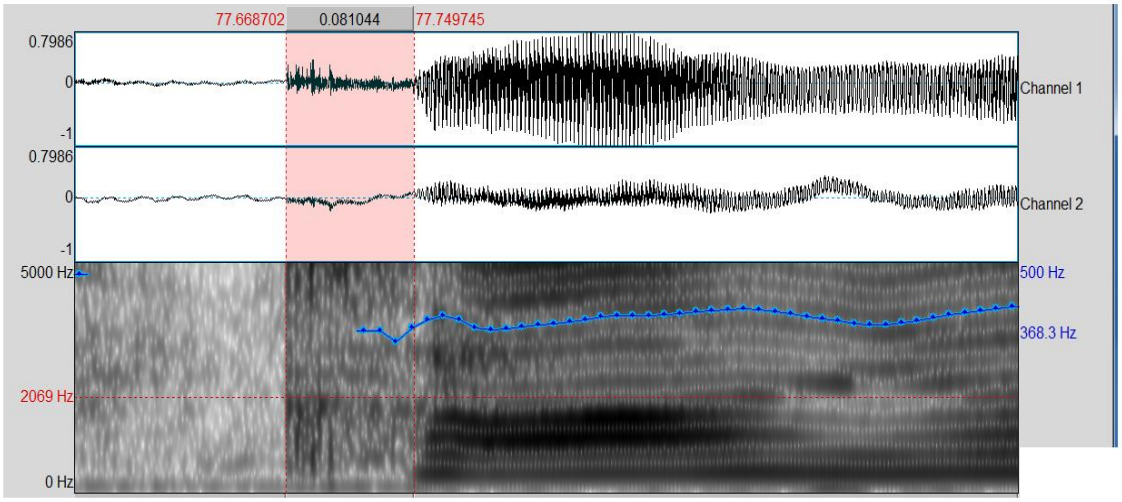

Figure 5.5. The waveform and spectrogram analysis of the first syllable */ka:/*in the Czech name *Kája* occurring in the English bilingual mode produced by S2. The red stripe demonstrates the length of VOT. It is measured from the burst to the beginning of voicing.

5.2.2 Comparisons – The Voiceless Bilabial Stop

In this section, I want to make a comparison of the production of the voiceless bilabial stop /p/ in the English bilingual mode. The produced Czech name was *Pája*and both instances were pronounced by S1 and S2. Unlike the instances of the voiceless velar stop /k/ mentioned in 5.2.1, the stop /p/ showed a significantly lower VOT quality.

No aspiration occurred in S1's /p/ production as the VOT quality was lower than 1ms. Nevertheless, due to the lack of instances of this stop, itis not possible to conclude and claim that S1 has acquired the VOT qualities of the voiceless bilabial stop in the bilingual environment. In Figure 5.6 you can see the only instance of the stop /p/ in this mode.

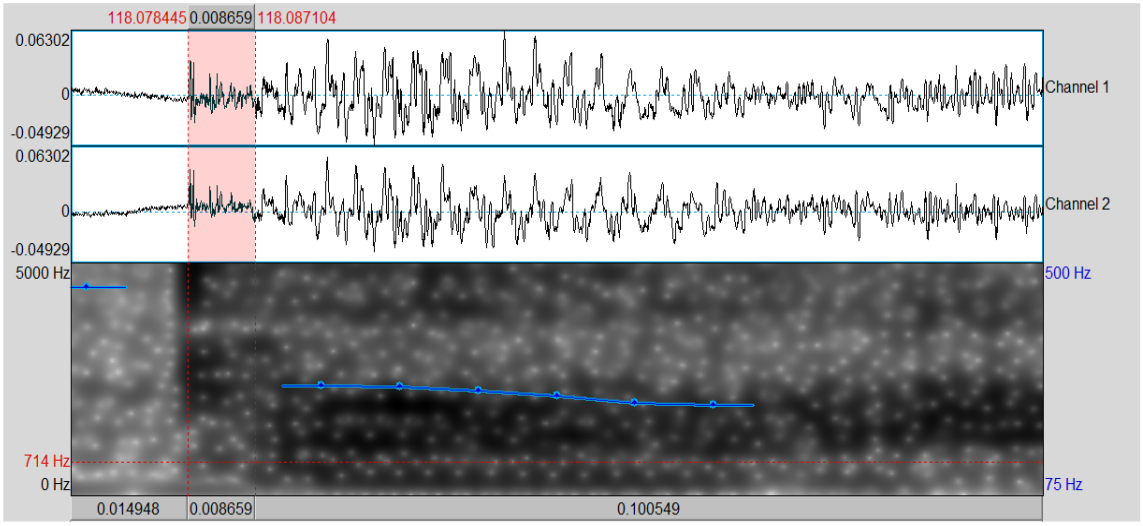

Figure 5.6. The waveform and spectrogram analysis of the first syllable */pa:/*in the Czech name *Pája* occurring in the English bilingual mode produced by S1. The red stripe demonstrates the length of VOT. It is measured from the burst to the beginning of voicing.

S2 did not provide many instances of the name *Pája*either;just two. However, in both of them very weak or moderate aspiration was present. In Figure 5.7 it can be noted that the VOT quality is 34ms, which is considerably higher than S1.

As mentioned above, although not many instances of voiceless bilabial stops in the bilingual environment were produced, the collected data hints that S2 is likely to have problems with code-switching.This is likely the reason why S2 produces aspirated voiceless word-initial stops.

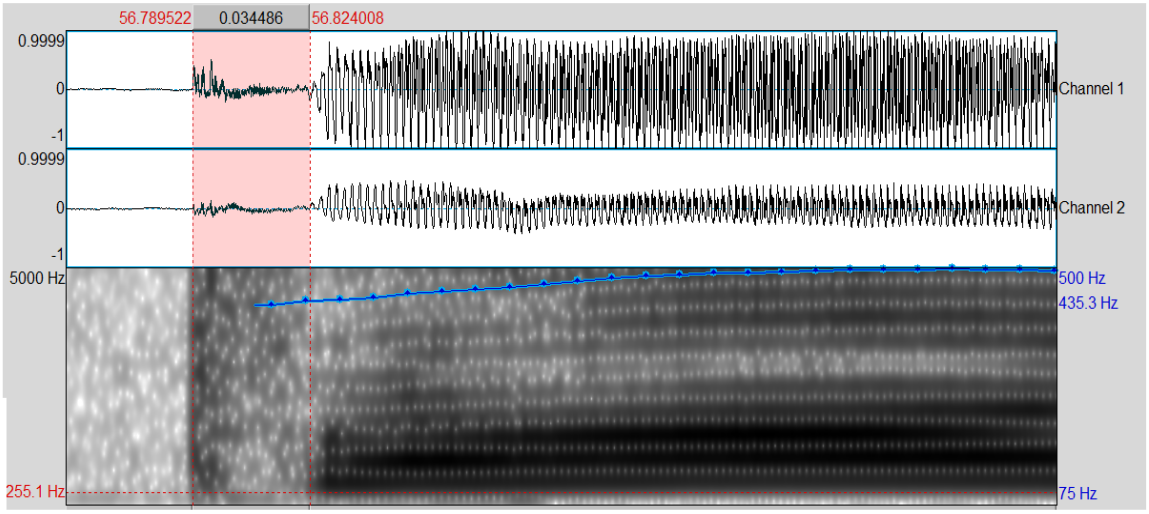

Figure 5.7. The waveform and spectrogram analysis of the first syllable */pa:/*in the Czech name *Pája* occurring in the English bilingual mode produced by S2. The red stripe demonstrates the length of VOT. It is measured from the burst to the beginning of voicing.

5.2.3 Comparisons – The Voiceless Alveolar Stop

Despite the fact that the voiceless alveolar stop was not used in any of the instances, a rather peculiar thing occurred during their production by S2. Figures 5.8 and 5.9 demonstrate the same word produced by different speakers.

In Figure 5.8, we can see a waveform and spectrogram of the word *tree* produced by S1. Under normal circumstances this word should be aspirated, which is the case here. The VOT quality is of 58ms and thus the bilingual speaker shows no deviations.

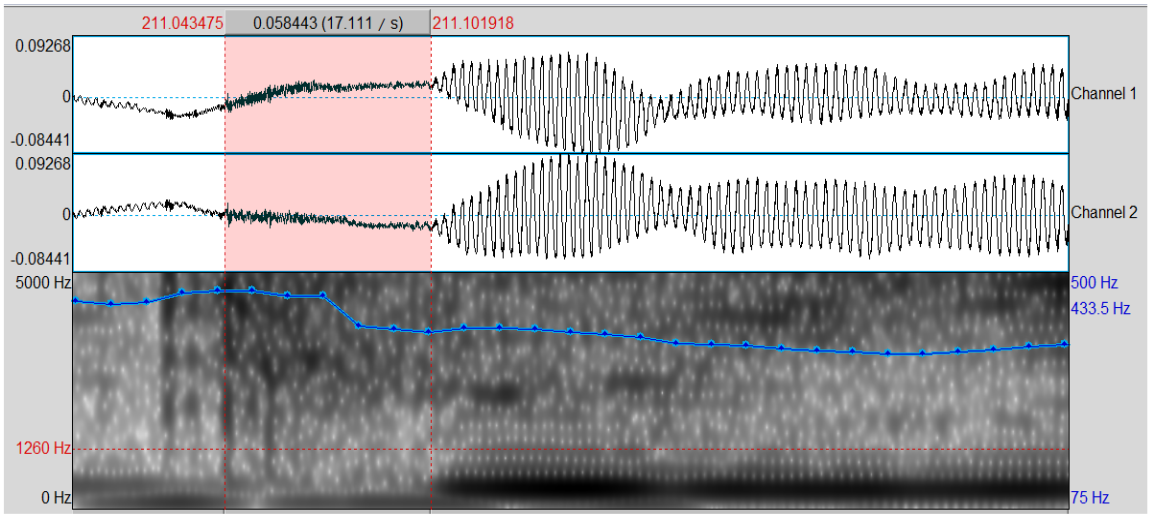

Figure 5.8. The waveform and spectrogram of the word *tree* produced by S1. Aspiration in this word is present.

In Figure 5.9, we can see a clear difference in the production of the same word by S2. The voiceless alveolar stop is not produced as a typical stop and is therefore not aspirated. According to the waveform and also the recording, the sound produced in the initial position of the word *tree* is combined with the voiceless palato-alveolar fricative /ʃ/ and thus no aspiration is present. However, this phenomenon occurred in most instances of the word *tree*spoken by S2and for this reason, it cannot be considered an accident.

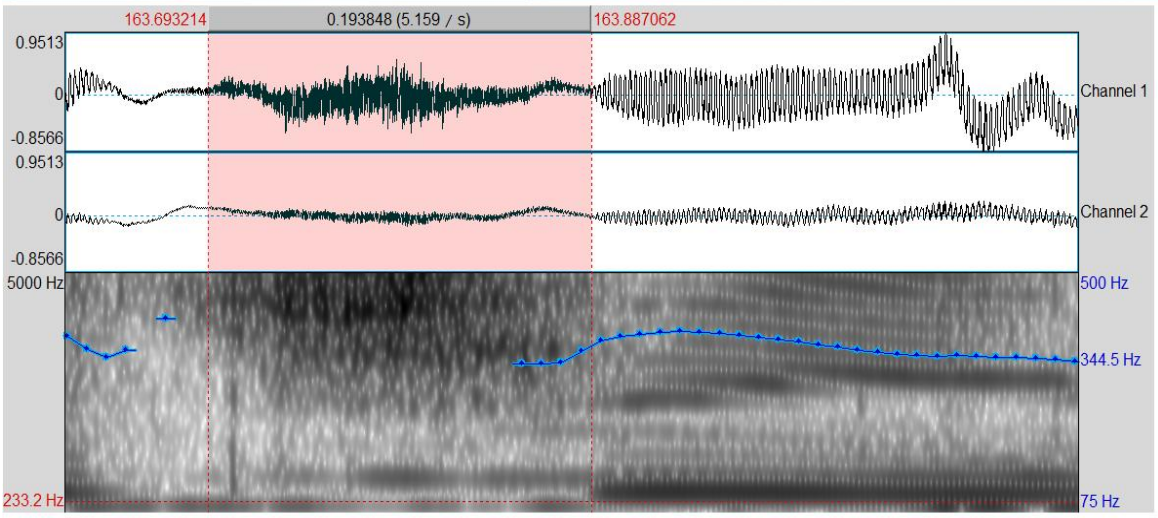

Figure 5.9. The waveform and spectrogram of the word *tree*produced by S2. Aspiration in this word is not present as the stop is accompanied by a fricative.

6 Conclusion

This thesis deals with the acquisition of voiceless initials stops occurring in either the bilingual mode or the monolingual mode of early bilingual children. The theoretical part, consisting of Chapters 2 and 3, briefly discusses bilingualism and the factors that affect acquisition of both languages. In Chapter 3 the main differences between the Czech and English voiceless word-initials are listed. Further in the chapter, VOT andaspiration is explained so that the difference between Czech and English is made clear. Lastly, this chapter also mentions variations between children's and adult's speech, especially VOT quality and aspiration.

The practical part consistsof Chapters 4 and 5 and its findings and results. These are based on my experiment, comprising two recording sessions, which is also detailed in these chapters.The recording sessions were divided into two separate parts and different subjects were present in both of them. Both sessions were recorded on a portable digital audio recorder and the collected data was consequently stored and analysed on Acer laptop. The purpose of the study was to find out whether or not the early bilingual participants chosen were capable of maintaining both languages separately at all times, in different conditions.For this reason, two different modes – monolingual and bilingual - were prepared in order to test the children's code-switching ability.

The primary plan was that participants would tell a story narrated according to the picture they would be shown. In order to evoke the bilingual environment, the children were told the names of the characters appearing the stories. The names began with voiceless stops. Nevertheless, the names of the stories' characterswere not successful and therefore very little data from the bilingual modes was provided. In the first experiment, however, two subjects were present, and thus it was possible to obtain more data by recording them while playing. Although they were asked to use some names for the toys they were playing with and they were also repeatedly asked to keep saying the names, this approach was more effective than the story narrative.

With regard to the hypotheses, it was expected that the participants would be able to keep both languages separate with reference to VOT and aspiration and therefore code-

switching would turn out to be successful. In particular, it means that the participants would not confuse voicing qualities of both languages. Although the first presumption has been confirmed, and thus the participants used voicing typical for the Czech and English language successfully, the second presumption has not been fully confirmed. S1 showed the VOT qualities appropriate for both languages; nevertheless, S2 apparently has not thoroughly acquired the VOT qualities of the Czech phonetic system. However, due to a lack of data collected from the participants, these results cannot be considered very reliable. Thus for any further experiments, it would be required to come up with more activities and interactive gamesfor children, so that more instances of names beginning with voiceless stops would be obtained. Once the children start using more names, it will also be much easier to make them activate bilingual modes and therefore testing code-switching and collecting bilingual data would be less difficult.

7 Závěr

Bakalářská práce se zabývá osvojením si neznělých exploziv, které se objevují buď v bilingvním nebo monolingvním prostředí. Práce se zaměřuje na bilingvní děti. Teoretická část se skládá z kapitol 2 a 3, jež popisují bilingvismus a faktory ovlivňující osvojování si obou jazyků. V kapitole 3 je poukázáno na hlavní rozdíly mezi českými a anglickými neznělými hláskami na začátku slov. Dále je v této kapitole vysvětlen pojem VOT a aspirace, čímž je objasněn i rozdíl mezi těmito dvěma jazyky. V této kapitole je také zmíněn rozdíl mezi tvorbou hlásek, především potom VOT a aspirace u dětí a dospělých.

Praktická část je tvořena kapitolami 4 a 5 spolu s výsledky, jichž se docílilo pomocí experimentu. Jeho základem byla dvě nahrávací sezení s bilingvními dětmi ve věku 4 až 6. Průběh nahrávání je také uveden v těchto dvou kapitolách. Sezení byla rozdělena do dvou části v obou případech s jinými účastníky. Obě sezení byla nahrána na přenosný rekordér a nashromážděná data byla následně uložena do notebooku, ve kterém byla i analyzována. Cílem práce bylo zjistit, zda jsou bilingvní děti schopy reagovat na přepínání mezi dvěma jazyky a zda tak budou schopni zachovat i jednotlivé fonetické systémy odděleně, aniž by se navzájem ovlivňovaly. Z tohoto důvodu byly zvoleny dva „režimy“ – bilingvní a monolingvní.

Prvotním plánem bylo, že účastníci experimentu přeříkají příběh podle obrázků z knížky. Aby se děti dostaly do bilingvního „režimu“, pro příběh v angličtině byla postavičkám v příběhu dána česká jména a naopak. Jména začínala neznělými obstruenty. Nicméně jména, zvolená pro příběh, neměla u dětí velký úspěch a tudíž se nepodařilo získat tolik dat, kolik se na začátku předpokládalo. V první části experimentu byly přítomny dvě holčičky - sestry, díky čemuž bylo možné nahrát data i během toho, co si ony hrály. Protože se po nich chtělo, aby si pojmenovávaly hračky, se kterými si hrály, ukázalo se, že tato metoda byla efektivnější, než samotné vyprávění příběhů a dívky tak používaly alespoň více jmen.

Předpokládalo se, že děti budou schopné foneticky rozlišovat oba jazyky a budou používat jednotné systémy, dané pro oba jazyky a tudíž nedojde k záměně či kombinaci hlásek. Ačkoliv se první hypotéza potvrdila, protože děti užívaly znělostní rozdíly typické pro oba jazyky, tzn. aspirace byla přítomná u anglických slov a u českých nikoliv. Druhá

hypotéza, týkající se záměny fonetických systému však nebyla plně potvrzena. S1 byla schopná rozlišovat oba fonetické systémy, avšak S2 si patrně neosvojil fonetický systém českého jazyka, protože jeho výsledky vykazovaly poměrně vysoké hodnoty VOT a slova byla aspirovaná. Nicméně, kvůli nedostatečnému množství dat se nedá brát tento výsledek za směrodatný. V dalších experimentech by bylo zapotřebí zapojit děti do více aktivit, při nichž by používaly jména, čímž by se zajistil větší přísun dat. Jakmile děti začnou používat více jmen, bude snazší je přimět přepínat mezi jednotlivými režimy.

8 Works Cited

1. Antoniou, M., Best, Catherine, T., Tyler, Michael D., Kroos, Christian. 2010. "Language Context Elicits Native-Like Stop Voicing in Early Bilinguals' Production in both L1 and L2." *Journal of Phonetics* 38: 640-653.Accessed August 14, 2013. doi: 10.1016/j.wocn.2010.09.005

2. Asher, J. J. & Garcia, R. 1969. "The Optimal Age to Learn a Second Language."*The Modern Language Journal* 53: 334-341.

3. Baker,C., Jones,S.P.1998.*Encyclopedia of bilingualism and bilingual education*. Clevedon, England: Multilingual Matters.

4. Beach, E. F., Burnham, D., and Kitamura, C. 2001. "Bilingualism and the Relationship between Perception and Production: Greek/English Bilinguals and Thai Bilabial Stops." *International Journal of Bilingualism* 5: 221-235. Accessed August 24, 2013 doi:10.1177/13670069010050020501

5. Deuchar, M. and Clark, A. 1996."Early Bilingual Acquisition of the Voicing Contrast in English and Spanish."*Journal of Phonetics* 24: 351-65.

6. Edwards, John. 2006 "Foundations of Bilingualism."In *Handbook of Bilingualism*, edited by Tej. K., Ritchie, William, C.,Malden: Blackwell Publishing.

7. Eimas, P.D., Siqueland, E.R., Jusczyk, P., & Vigorito, J. 1971. "Speech Perception in Infants."*Science* 171 (968): 303 – 306.

8. Fathman, A. 1975. "The Relationship between Age and Second Language Productive Ability."*Language Learning*25.

9. Fowler, C. A., Sramko, V., Ostry, D. J., Rowland, S. and Halle, P. 2008. "Cross Language Phonetic Influences on the Speech of French-English bilinguals." *Journal of Phonetics 36:* 649-663.

10. Flege, James, E., Eefting, Wieke. 1987. "Cross-Language Switching in Stop Consonant Perception and Production by Dutch Speakers of English. *Speech Communication* 6: 185-202.Accessed August 14, 2013.
Retrieved from http://jimflege.com/L2_Research.html

11. Flege, James, Emil. 1991. "Age of Learning Affects the Authenticity of Voice-onset Time (VOT) in Stop Consonants Produced in a Second Language." *Journal of the Acoustical Society of America* 89 (1): 395-411. Accessed August 14, 2013.
Retrieved from http://jimflege.com/L2_Research.html

12. Flege, J. E. and Fletcher, K. L. 1992. "Talker and listener effects on degree of perceived foreign accent."*Journal of the Acoustical Society of America* 91: 370-389.
Accessed August 14, 2013.
Retrieved from http://jimflege.com/L2_Research.html

13. Flege, J. E. 1995a. "The Phonetic Study of Bilingualism" *European Studies in Phonetics and Speech Communication*. Utrecht:98-103.Accessed August 14, 2013.
Retrieved from http://jimflege.com/L2_Research.html

14. Flege, J. E., Munro, M. J. & MacKay, I. R. A. 1995b. "Factors Affecting Strength of Perceived Foreign Accent in a Second Language."*Journal of the Acoustical Society of America* 97: 3125-3134. Accessed August 14, 2013.
Retrieved from http://jimflege.com/L2_Research.html

15. Flege, J. E., Yeni-Komshian, G. & Liu, H. 1999. "Age constraints on Second Language Acquisition."*Journal of Memory & Language* 41: 78-104.Accessed August 14, 2013.
Retrieved from http://jimflege.com/L2_Research.html

16. Flege, James, E. 2007. "Language Contact in Bilingualism: Phonetic System Interactions. In *Laboratory Phonology* 9, edited by Jennifer Cole and José Ignacio Hualde. New York: Mouton de Gruyter. Accessed August 14, 2013.
Retrieved from http://jimflege.com/L2_Research.html

17. Gass, Susan, M., and Larry Selinker. 2008. *Second Language Acquisition: An Introductory Course.* 3rded. New York: Taylor&Francis E-Library.

18. Gass, S. 1984. "Development of Speech Perception and Speech Production Abilities in Adult Second Language Learners."*Applied Psycholinguistics* 5: 51-74.

19. Grosjean, F. 1982. *Life with Two Languages: An Introduction to Bilingualism*. Cambridge, Mass: Harvard University Press

20. Hurford, J. R. 1991."The Evolution of the Critical Period for Language Acquisition."*Cognition* 40: 159-201.Accessed August 14, 2013.
Retrieved from http://www.lel.ed.ac.uk/~jim/crit.per.pdf

21. Kang, K.-H., & Guion, S. 2006. "Phonological Systems in Bilinguals: Age of LearningEffects on the Stop Consonant Systems of Korean-English Bilinguals." *Journal of the Acoustical Society of America* 119: 1672–1683. Accessed August 14, 2013
DOI:10.1121/1.2166607

22. Koenig, L. L. 2000. “Laryngeal Factors in Voiceless Consonant Production in Men, Women, and 5-year-olds.” *Journal of Speech Language, and Hearing Research* 43: 1211-1228.
Retrieved from www.haskins.yale.edu/Reprints/HL1242a.pdf

23. Koenig, L. L. 2001. “Distributional Characteristics of VOT in Children’s Voiceless Aspirated Stops and Interpretation of Developmental Trends.” *Journal of Speech Language, and Hearing Research* 44: 1058-1068.Accessed August 14, 2013.
doi:10.1044/1092-4388(2001/084)

24. Ladefoged, P. 2001.*A Course in Phonetics.*Boston: Heinle and Heinle/Thomson learning.

25. Lenneberg, E. H. 1967. *Biological Foundations of Language*. Oxford: Wiley & Sons.

26. Lim, L. L., Watson, C. 2002. “An Acoustic Comparison of Adult and Child Stops.”*Proceedings of the 9th Australian International Conference on Speech Science & Technology Melbourne*. Australian Speech Science & Technology Association Inc. 136-141

27. MacKay, Ian R.A., Flege J. E., Piske, T., Schirru Carlo. 2001. “Category Restructuring During Second-Language Speech Acquisition.”*Acoustical Society of America*.Accessed August 14, 2013.
Retrieved from http://jimflege.com/L2_Research.html

28. Macken, M.A. and Barton D. 1979. “The Acquisition of the Voicing Contrast in English: A Study of Voice Onset Time in Word-Initial Stop Consonants.” *Journal of Child Language* 7:41-74.

29. MacLeod, Andrea. A. N., and Stoel-Gammon, Carol. 2009. "The Use of Voice Onset Time by Early Bilinguals to Distinguish Homorganic Stops in Canadian English and Canadian French." *Applied Psycholinguistics* 30: 53-77.

30. Meador, D., Flege, J. E., and MacKay, I. R. A. 2000. "Factors Affecting the Recognition of Words in a Second Language."*Bilingualism.Language and Cognition* 3: 55-67.Accessed August 14, 2013.
Retrieved from http://jimflege.com/L2_Research.html

31. Ohde, R. N. 1985. "Fundamental Frequency Correlates of Stop Consonant Voicing and Vowel Quality in the Speech of Preadolescent Children." *Journal of the Acoustical Society of America*78 (5): 1554-1561.

32. Oyama, S. 1976. "A Sensitive Period for the Acquisition of a Non-Native Phonological System." *Journal of Psycholinguistic Research* 5: 261-283

33. Piske,Thorsten, MacKay Ian R.A., and Flege, James, E. 2001 " Factors Affecting degree of Foreign Accent in an L2: A Review." *Journal of Phonetics*29.Accessed July 10, 2013.
Retrieved from http://jimflege.com/L2_Research.html

34. Purcell, E. T., and Suter, R. W. 1980. "Predictors of Pronunciation Accuracy: A Reexamination." *Language Learning* 30: 271-287.

35. Romaine, S. 1995. *Bilingualism*. 2nd ed. Oxford, England: Blackwell

36. Schmidt, A. M., andFlege, J. E. 1996. "Speaking Rate Effects on Stops Produced by Spanish and English Monolinguals and Spanish/English Bilinguals."*Phonetica* 53 (3).Accessed August 14, 2013.
Retrieved from http://jimflege.com/L2_Research.html

37. Seliger, H. W. 1978. “Implications of a Multiple Critical Periods Hypothesis for Second Language Learning.” In *Second Language Acquisition Research: Issues and Implications*, edited by W. Ritchie, editor) New York: Academic Press.

38. Selinker, L. 1972. "Interlanguage."*IRAL, International Review of Applied Linguistics* 10 (3):209-231

39. Simon, Ellen. 2009. “Child L2 Development: A Longitudinal Case Study on Voice Onset Times in Word-Initial Stops.” *Journal of Child Language* 37: 159-173.Accessed 26 June,2013.
DOI: http://dx.doi.org/10.1017/S0305000909009386

40. Snow, Catherine E., and Marian Hoefnagel-Hohle. 1978. “The Critical Period for Language Acquisition: Evidence *from Second Language Learning*.”*Child Development* 49 (4): 1114-1128.

41. Thompson, I. 1991. “Foreign accents revisited: The English pronunciation of Russian immigrants.” *Language Learning* 41:177–204.

42. Valdés, G. 2001. “Heritage Language Students: Profiles and Possibilities.“ In*Heritage Languages in America: Preserving a National Resource*, edited by J. Peyton, D. Ranard, and S. McGinnisWashington, D.C.: Center For Applied Linguistics

43. Vanlocke, Janey.2011. *On the Production of Aspiration and Prevoicing: The Effect of Training on Native Speakers of Belgian Dutch*. Master Thesis. Ghent University.Accessed August 14, 2013.
Retrieved from http://lib.ugent.be/fulltxt/RUG01/001/786/578/RUG01-001786578_2012_0001_AC.pdf

44. Walsh, T. M., and Diller, K. C. 1981. "Neurolinguistic Considerations on the Optimum Age for Second Language Learning."In *Individual Differences and Universals in Language Learning Aptitude*, edited by K. C. Diller.M. A. Rowley,: Newbury House.

45. Werker, J. F., and Byers-Heinlein, K. 2008. "Bilingualism in infancy: First Steps in Perception and Comprehension." *Trends in Cognitive Scienes* 12 (4): 144-151. Accessed August 14, 2013
doi:10.1016/j.tics.2008.01.008

46. Whiteside, S. P., and Marshall, J. 2001. "Developmental Trends in Voice Onset Time: Some Evidence for Sex Differences." *Phonetica*.58: 196-210.

47. Yavaş, M. 2009. "Factors influencing the VOT of English long lag stops in Interlanguage phonology." In *Recent Research in Second Language Phonetics/Phonology: perception and production,* edited by M. Watkins, A. Reuber, and B. Baptista. Cambridge Scholars Publishing: 244-255.

48. Yip, V., and Matthews S. 2006. "Assessing Language Dominance in Bilingual Acquisition: A Case for Mean Length Utterance Differentials."*Language Assessment Quarterly* 3 (2): 97-116. Accessed August 14, 2013.
DOI: http://dx.doi.org/10.1207/s15434311laq0302_2

49. Zlatin, M. 1972. *Developmental of the Voicing Contrast: A Psycholinguistic Study of Voice Onset Time.* Unpublished doctoral dissertation, Northwestern University.

BOOKS USED FOR THE STORY-TELLING:

1. Meyer, Mercer. 1969. "Frog, Where Are You?" New York: Dial Books for Young Readers.
2. Meyer, Mercer., Meyer, Marianna. 1971. "A Boy, a Dog, a Frog and a Friend." New York: Dial Books for Young Readers.

9 Appendix 1: Questionnaire

1) Name and Age of the child / children

2) The country where you live at the moment.

3) Has your child ever lived in the country of the other parent? If yes, how long and has it influenced the child's speech in any way?

4) Did you encounter any bilingual family before you had your own? Have you searched for any materials/ books etc. dealing with bilingualism?

5) Which type of communication is common in your family? (one person – one language)

6) Which language is dominant in your family?

7) Which language do the parents communicate in?

8) Which language do children prefer when talking to one another?

9) Have you ever noticed in your children any complications or problems to make themselves understood? (Pronunciation, stylistics, word-order)

10) Do you point out mistake your children make?

11) Does your child use both languages to the same extent?

12) Which language is perceived as the primary one?

10 Transcriptions

STE_006 1:19

Misha:So, boy and froggie and a puppy everyone went to bed and then they wake up and the frogie was gone

Amanda:What's the name of the frog?

Misha: Gaba

Amanda:And who's the little boy sleeping

Misha: Puppy , I already told you that part

Amanda:What's their names?

Misha: Kaja and Paja

(...)

Amanda:So what happens next? So the little frogie ran away?

Misha:Yes.Can you turn the page and then look then look and look..and look

Then all they were..and the puppy was jumped because of the window and the boy caught him and they went

Amanda:But what's his name? Use his name.

Misha: I don't know…I want to use his name

I don't want to

Amanda:So the boy caught him

And they all were: "Where is my frogie, come out frogie." Bees and bees and bees and bees

Turn the page.

And then puppy barked at the buu..bees and the boy was looking for the frogie

Amanda:And what did he find?

Misha:A mole..

Amanda:A mole? Really?

Misha: and then boy was up the tree and puppy there was, bees after him and the bees went after the puppy and the the boy fall of the tree

Amanda:Who's that?

Misha:And owl was looking at him

Amanda:What's the owl's name?

Misha:Bara but I don't want to use owl's name

Amanda:OK, you don't have to

Now

(...)SNEEZE

Misha:The owl put him on the rock. Next page. And then there was somebody who had big long ear

Amanda:Antlers not ears, those are antlers.

And who's this?

Misha:Deer, throwed those things, he went to water and then and then they heard something and that was the fro-gie ,it is a frog and Gabinka was this one and they took the small one that name Gabinka and they left Gabinka and they gived it name Gabinka and that's the end.

Amanda:Yay. Very good. Thank you.

STE_007 1:40

Misha: Can I fly with you? I'm gonna ask my Mommy.

Bella: But Mommy's not here.

Misha: No, she's upstairs reading her book.

Misha:Who's gonna be the Mommy? Who's gonna be the king and who's gonna be the Mommy? Who's gonna be the queen and who's gonna be the king.

Bella: Queen or Mum?

Misha: King.

Iva: OK. I can be the king.

Misha: OK.

Amanda: Can I be the queen?

Misha: It doesn't matter who is what.

Amanda: I know how you get your lollipops back.

Misha: How?

Amanda: Do you really wanna know? Do you really wanna know?

OK. There's one thing that both of you need to do to get the lollipops back.

Bella: Fly?

Amanda: No. OK. First thing…

STE_011 0:33

Misha: Once upon a time there was a little butterfly who weared a crown. And that butterfly landed on a flower and then he point to the girl who held a bell and she … and she ringed it and that's the end.

Amanda: Good job! Very good story.

Iva: Řekneš mi to i v češtině?

Misha: Jeden den byl jeden motýl, kterej nosil korunu a to a pak přišel na kytičce a ukázal na jednu holčičku, která držela zvoneček, ona ho zazvonila a pohádky je konec.

Iva: No super. Tak já myslím, že si zaslouží nějakou odměnu.

Amanda: What was the butterfly's name?

Misha: I don't know.

Amanda: You didn't name them?

Iva: Oni neměli jména?

Bella: Žofie

Iva: Žofie?

Misha: No! Fifinka.

Amanda: Fifinka? So what else happened to Fifinka?

Misha: That's the end.

Amanda: Nothing else happened? What if Fifinka got hungry?

Misha: I told you it landed on the flower.

Amanda: And could she eat the flower?

Misha: Don't know. She simply fly on the flower.

Amanda: Aha.

Misha: That's it.

Amanda: Do you have a story?

Bella: Nope.

Amanda: You don't have one? OK, we have one more story

Bella: Look, I'm (not understandable) my wings.

Amanda: You can make another one.

STE_016

Misha: You can pick out your clothes and we…

Amanda: Who's you?

Bella: Misho!

Amanda: Careful. Use some names, Misha.

Misha: OK. Now. Barbie you must pick out your clothes.

Bella: Can you go with me? I don't know.

Misha: I must……. on the foot. The clothes are…you go straight then to the left and then there you are. Good. Enjoy that.

Bella: But I don't know where is (not understandable)

Misha: That way! Just and and I'll go. If you don't know just call me and I am gonna… go. Why don't you go and I can order some pizza.

Bella: Alright.

Misha: OK, Kelsey. Now let's go.

Bella: Barbie!

Misha: Oh – gotta go! You must wait here

Amanda: (whispering) Patrick!

Misha: Patrick (whispering). You must stay here until we come back.

OK.

Bella: Barbie,Barbie, where are you?

Misha: Why don't you just come up?

Bella: I can't, I don't have any xxxx to come up

Misha: You don't remember? I will come to you and we will go.

I said come up! What are you doing?

(1:33 – 1:46 song playing)

Misha: I said come up!

Bella: I can't. Just little wait.

Misha: I've just said it.

(1:55-2:08 accident)

Amanda: Good job. Can you do the next one in Czech ?

Misha: Why?

Amanda: 'Cause

Iva: It can be a new one.

Amanda: I'll do one in Czech.

Bella: Me. Hey penguin. Hi penguin.

Misha: OK.

Amanda: That's Patrick.

STE_017

Misha: ...from school.

Amanda: Any boys in the class?

Misha: I don't know.

Amanda: Who do you want to go with?

Misha: Sára.

Amanda: Only?

Bella: Look. (xxxxx)

Amanda: What about... what about..what's her name? The girl with a big head?

Bella: I can make a puppet show… a puppet show. A puppet show.

Misha: She goes to Liščák.

Amanda: She goes to Liščák?

So what do you want your teacher's name to be?

Misha: I don't know

Amanda: What do you want?

Bella: Emilka?

Misha: No. Sophie.

Amanda: Sophie? And how many boys do you want to have in the class?

Misha: None.

Amanda: None? You want only girls in your class? Yeah?

Give me..ok, who do you play with besides Sara?

Misha: With Kája (x x x) with Kája.

Amanda: With Kája? A boy Kája?I thought you said you wanted no boys in the class.

Bella: Check my flowers.

Misha: In my class but he's in a different class.

Bella: And you can take my fairy.

Misha: So I don't know if I'll go with him.

Amanda: And where are you going to school?

Misha: Kostel.

Amanda: Kostel? Can you tell… Can you tell teta where you're going? And who you want in the class.Tell her who Sara is.

Misha: Sara je moje kamarádka ze školky.

Iva: A vy spolu budete chodit do školy, jo? A bude tam chodit ještě někdo jiný s tebou?

Amanda: Go on and talk.

Misha: Kája.

Iva: Kája? A to je holka nebo kluk?

Misha: Kluk.

Iva: Kluk, jo ?A je to kamarád tvůj?A máš tam ještě nějaké jiné kamarády?

Amanda: Kája is the only boy you like?

Bella: Oh, hello buddy! – Hi!

Amanda: Hi!

Misha: That's my Sophie!

Amanda: That's OK.

Bella: That's not Sofie.

Misha: But it's mine and you don't need to have it.

Amanda: Hey! Let her…

Bella: Misho…toto je jako moje.

Amanda: It's OK..keep doing the puppet show. Keep doing the puppet show, please! OK, tell us a story.

Bella: You must (not understandable)

2:54 – 3:03 just whispering

Misha: I wanna play a puppet show too.

Amanda: OK..and you can do a puppet show for your sister, which you two will create together.

Misha: Can I play with a swan?

Bella: To je moje! To je moje.

Amanda: You can have a princess in the show.

Bella: Misho, to je moje Barbie.

Misha: That's mine x x x

Bella: To je moje!

Amanda: You stop, you stop. Princess for princess

Bella: Misho ale to jsem jako dostala od Ježíška.

Misha: Nene, you got the other princess.

Amanda: It doesn't matter. Share it, it's the same thing. They're both puppets.

Bella: It's mine.

Misha: No, it's mine.

Amanda: Who cares. Just play with it. Misho, knock it off! I don't remember who got what and I don't think it matter because they're both very nice puppets and they're both just as much fun.And I think, I think..that you guys, can share them equally, don't you think?

Misha: But I don't want to …..(mumbling)

Amanda: Well, the choose something else. What about Sponge Bob? Why not have Sponge Bo in the puppet show?

Bella: And the Sponge Bob is coming and here's the princess..haha.

Amanda: See? You can do that.

Misha: But she cannot swim in the water, she's a princess.

Bella: Here comes Sponge Bob to eat you.

Misha: But I already ate you.

Tady aspoň někde se ta princezna schová.

Bella: Co tam je, Mišo? Nevadí, že tady půjdem pro ovečku, jo?

Misha: Can I watch Sponge Bob?

Amanda: No, not now! Maybe before bed.

Misha: But…

Amanda: Before bed.

Bella: Mišo! Tak dělej něco.

Amanda: Let's do a theatre show. What do you think?

Misha: OK

Misha: You two gotta play a theatre show.

Amanda: We'll play a theatre show?

Misha: Yes!

Amanda: I'll play a theatre show if you and Bella play one too. Yeah? Deal? OK. So what do ou want you guys do?

Misha: And who's starting? Let's play… I'm playing the owl.

Amanda: Who wants to start?

Misha: I'm doing the piggy.

Amanda: Do you wanna start?

Misha: Yeah.

Amanda: Do you and Bella have a story? Or you wanna practice first?

Misha: No, we already have a story.

Amanda: Really? Does Bella have a story?

not understandable

Misha: Bella, but you have to choose princess or the piggy.

6:23-6:30 playing pigs

Iva: Co to je za příběh?

Amanda: What's the piggy's name?

Bella: Sofie.

Misha: No.

Amanda: What about Bob?

Bella: Bob.

Amanda: Bob and the princess ?

Misha: I'm going to have…

Amanda: Princess Bella?

Misha: Yes! Princess Isabella.

Amanda: Princess Isabella?

Bella: Princess Isabella and Bob, yes?

Amanda: Yes, princess Isabella and Bob the pig, right?

Misha: Barbie, Barbie.

Amanda: Barbie?Barbie the pig?

Iva: Barbie the pig? Hmm…

Amanda: OK.

STE_018

Amanda: Ahoj Barbie.

Misha: Ahoj.

Amanda: What's my name?

Misha: What?

Amanda: What's my name?

Ahoj Kelsey.

Misha: Ahoj Kelsey.

Amanda: Tak. Co budeme dělat dneska?

Misha: Já nevím.

Amanda: Chceš jít na pláž?

Misha: No tak jo.

Amanda: Jo? Tak…Oh, Patrik

Misha: Co… Co tu děláš na cestě ? My chceme jít na pláž.

Bella: Na pláž?Vy spadnete tam do vody

Misha: Nespadneme.

Bella: Tam je voda, koukejte! Budete celé mokré a pak můžete jít domů.

Misha: Kelsey, you have a go.

Amanda: Co?

Misha: You have a… Kelsey, prosím, Kelsey, teď ty to zkusíš.

Amanda: Jo?

Bella: Stop. You can't go through. Not understandable.

Misha: Bella, you must Czech.

Iva: Co, co říkáš?

Bella: mumbling… You must fly. You don't have wing and I have wings.

Amanda: So can we have a ride?

Bella: I can do (not understandable) get for the other one.

Amanda: OK.

Bella: Who want to go first?

Misha: Me. Me.

Bella: Alright.

Misha: Sitting.

Bella: Počkej. Já ji tam nandám, jo?

Mišo?

Misha: Are we gonna go yet?

Bella: Ready. Thank you.

Misha:Wow. I am at the beach. Thank you Patrick.

Bella: Ale musíš jít tady.

Misha: Can you, Bella… (mumbling)

Bella: The other one.

Amanda: Čekám, čekám. Oh, Patrick, take me somehow. And when you get there say: "Welcome Kelsey."

Misha: Petron!

You're welcome.

Bella: And then not go here, yes? Bye-bye

Misha: And you can say: "Welcome Kelsey and welcome Barbie."

Bella: Now, stop that. Wow! This is nice. Did we brought everything?

Amanda: Maybe. Wanna go swimming?

Misha: Hmm OK.

Bella: Oh, gotta go.

Amanda: OK Barbie. Let's go.

Bella: What're you doing? Can you go …does you have wing and you can fly…

Misha: But we are swimming. Excuse me.

Bella: Stop!

Misha: Excuse me.

Bella: Stop.C'mon.

Amanda: Oh, Patrick…you're so annoying. What do you want?

Misha: Yes, what do you want?

Isabella: incomprehensible

Amanda: What do you want?

Misha: It doesn't matter. Come on Barbie, let's go back to outside.

Amanda: Ano, Kelsey.

Bella: Stop.

Amanda: Tak pojd' Kelsey, jdeme tady.

Bella: Stop!

Misha: Patrick! Kelsey! Just look, what do you want?

Bella: Everything what you can I must take all of your money.

Misha: We don't have any, we didn't bring any.

Bella: That's OK, I'll earn some for you and you must give me a fifth thousand six six thousand money.

Bella: You just stop. You can't go where we went.

Amanda: Misha, so now you're not speaking.

Misha: That's ecause Patrick is annoying, that's why I'm not speaking.

Amanda: So you can talk to him, why don't you try to be his friend? Cuz I think that Patrick speaks better Czech than English.

Misha: OK. Together.

(whispering)

Amanda and Misha: Patriku, budeš náš kamarád?

Bella: Jenže já se tady schovávám.

Amanda: A proč?

Misha: This is annoying, I am going back.

Bella: But Kelsey fell off! (incomprehensible)

Kelsey, oh, Kelsey …(incomprehensible) That's OK. (incomprehensible mumbling)

Misha: Whoa, you scared us! Petron. I'm gonna call you Petron instead of Patrick.

Bella: That's OK. I'm gonna eat you.

Iva: What do you call him instead of Patrick?

Amanda and Misha: Petron.

Bella: You eat ….(incomprehensible)

Misha: As you wish, Petron. (both of them speaking at the same time) ..Petron.

I brought my money but I'm gonna.. I won't give it to you.

Amanda: Barbie, Barbie, Barbie, kde jsi? Barbie.

Misha: Kelsey, I'm right here.

Amanda: Barbie, a kde je Petron?

Misha: I don't know where is..ehh Petron. Maybe he is there but I was looking for my glass, it fell into the water so I must go.

Bella: I must pick all the money.

Amanda: I'm tired. Can teta play Babie/Kelsey whoever this is? So I can take a break.

Misha: OK.

Misha: Oh, Kelsey, where are you?

8:30 – 8:48(song playing)

Misha: Oh, Kelsey, where are you?

Iva: A koho hledáme?

Misha: No tebe, Kelsey.

Iva: Mě hledáme?

Misha: Oh, Kelsey. Oh, Kelsey. Kelsey I was looking for you.

Iva: Ale já se tě bojím, já před tebou utíkám. Já se tě bojím.

Misha: Kelsey, that's me Barbie.

Iva: Já tě neznám.

Misha: I'm Barbie, your best friend.

Iva: Ne, ty nejsi Barbie. Nevěřím ti.

Amanda whispering : Can Barbie speak Czech?

Iva: Já ti nerozumím.

Misha: I AM BARBIE!!

Iva: Barbie?

Misha: Yes.

Iva: A kdo je tohle?

Misha: That's Petron. I call him Petron, it's Patrick cuz he' not nice to me.

Iva: Já ti nerozumím, já ti nerozuím, mluv česky.

Misha: When I was swimming…

Amanda: Mluv česky ale.

Iva: Vždyť jsi říkala, že češtinu máš ráda.

Amanda: It's better for teta. She's not so good with English. Czech is better for her.

Misha: Když jsem já plavala, tak on mě pořád zastavoval, tak já mu říkám Petron.

Iva: Petron Co to znamená?

Bella: Nadávka pro tady to kuře, né?

Iva: A co tady dělá? A co tady dělá?

Bella: A já vám můžu sebrat ty peníze.

Misha: Slyšíš, já ti to říkala, že na mě je zlej. Tak si pojď

Iva: Jdeme od něj, jdeme pryč. Ale on nás pořád pronásleduje.

Misha: Hele, půjdeme, kam on nemůže doletět.

(whispering)

Misha: Tůdle, Petrone, Petrone. Pomóc!

To jsme nevěděli, jak to zvládá. Pomóc!

Iva: Pronásleduje mě. Pomoc!

11:00 – 11:15 (shouting and screaming during playing the game)

Misha: Ne, pomoc.

Iva: Vždyť mi roztrháte šaty.

Misha: Honem, dozadu, dozadu se schovej.

Iva: Dozadu, dozadu.

Misha: Tudle, nudle Petrone.

Iva: Hele, tady je mořská víla. Ta nás zachrání.

Misha: Jo. Can we play this one?

Amanda: What's her name?

What about… ?

Misha: Vkhel.

Amanda: Vkhel?

Iva: Co to je za jméno?

Amanda: Vkel. OK. Yeah. Sure.

Misha: Or maybe a different name. Maybe Sofie.

Iva: Sofie se jmenuje už prasátko.

Amanda: You have lots of Sophias.

Iva: Dneska už bylo hodně Sofií.

Iva: Co třeba ..what about? Kheyla..by to mohla být.

Amanda: Kheyla?

Misha: OK.

(whispering)

Misha: Can you swim? Umíte plavat?

Iva: Já trošku umím plavat.

Misha: Já taky, takže si pospíšíme. Půjdeme pod vodu a musíme (more people speaking at the same time)

Iva: Nahlas mluv. Mluv nahlas.

Misha: Prosím tě,půjdeme někam dozadu. Tady Petrone.Rychle, se dozadu.Já jsem vám to řikala, že to dokážem.Tudle, nudle Petrone.A teď tam zůstaňte.

Tak pojďte.

13:19- 13:35(Music playing)

Bella: Where's money!

Misha: We don't have any. We left them at home

(both sisters speaking at the same time)

Iva: Nemáme žádný peníze pro tebe.

Bella: I need to take them and eat them.

Misha: (at the top of her voice): Chce sníst naše peníze! Pomóc!

(both sisters speaking simultaneously)

Misha: Kdo má nápad, kdo má? Kdo má nápad, kdo má?

(screaming)

Iva: To je velkej Patrik. To je jeho táta a ten přišel.To je velkej Patrik.

Misha: This is his Daddy.

Oh, this is his Daddy. Please, help!

Iva: Help us, Daddy. Help us, Daddy.

Misha: Petron, Petron. Oh, Petron's Daddy. Mr Baker.

Bella: We have to hide.

Misha: Mr Baker, we have to hide.

Iva: Mluv česky.

Misha: Oh, tak jo.

Tady, tudle, tudle. We have to. Do you have… máš nápad?

Iva: Musíme to říct Patrikovýmu tátovi, aby nás ho zbavil.

Misha: Jo. Patriku, Patriku pojď sem.

Iva: Ale Patrik nepřichází.

Misha: To je divný.

Iva: Musíme zavolat jeho tátu.

Misha: Ne, Patrika a pak já řeknu ..(whispering)

Patriku, potřebujeme tebe.Chceme ti něco říct.

Iva: Patriku, pojď sem.

Misha: Patriku.

Bella: Tak buď potichu a nic neříkej.

Misha: Patriku, my tě slyšíme. Hele, jako ty půjdeš.Protože jsi ukrad naše peníze.

Iva: Patriku pojď. Máme peníze.Pojď si pro peníze.

Misha: Petrone….Petrone, tak tady jsme. Ne, my jsme tady.

Iva:Pojď. We've got money for you.

Misha: Máme penízky, Petrone. Pojď sem.

Bella: Nepůjdu!

Iva: Proč? My ti dame peníze. Koukej, máme peníze

Bella: Ani vás neposlouchám.

Misha: Ale posloucháš svýho tátu.

Bella: Já si zavolám tátu, že jo.

Iva: Zavoláme tvoji mámu.

Bella: Ne, ale máma je pryč.

Iva: To bude tvoje mama.

Misha: Tatínku. Jako tatínek půjdeš.Táto, táto.

Bella: Si řeknem o všechny penízky, jo? Tři, dva, jedna.

A jak my budeme padat, tak se chytíme spolu, jo?

Misha: Ne, jestli vy budete padat oba dva, tak já vás zachráním.

Iva: Proč bys je zachraňovala?

Misha: Protože (whispering)

Iva: Ale vždyť oni nás obtěžují a my se jich potřebujeme zbavit.

Misha: Takže ty, Patrikovo táta. My jsme tady nahoře.

(the sisters speaking simultaneously again)

Bella: Mořská panna… To si teda vychutnáte.

Misha: Ne, počkat. Ty si jdi hrát Petrone, my tě nepotřobujeme. My potřebujeme tvojího taťku.

Iva: To není mořská panna, to je Kheyla.

Misha: No, jo..Kheyla.

Ach jo! Prosím tě, jako to, ty jsi na nás hodnej, ale prosím tě on nás otravuje, něco mu řekni. Prosím, prosím!Ať se nás zbaví, on nás pořád otravuje a chce naše peníze. My je máme na jiný věci, třeba to, třeba si kupovat nový řetízek, kdyby nám je někdo roztrh. A chce mě sníst.

Bella: Sníst?

Iva: Jo, sníst.

Misha: Ano. Sníst.

Iva: Řekni mu něco.

Bella: Já zavolám mámu. A mama a já se na to rozzlobím. Tak, on vždycky zlobí, když ho někdo uvidí a sebere mu peníze.

Misha: Ano, ale on nás jako otravuje. Necháte ho doma?

Iva: Je na nás zlý.

Bella: Ne, nemůžu. On si potřebuje i pohrát.Ale nemůžete vždycky, když vás nědo zavolá a vy rychle běžet zpátky, jinak my zavoláme Patrika, aby vís sebral všechny peníze.To jako ne.

(fast and confused speech)

Iva: Ale my se ho chcem zbavit. My si s ním nechcem hrát.

Misha: Jo, on je na nás strašně zlej.Je na nás jako to. Jako kdyby byl příšera.

Bella: Jé, my musíme jít s mamkou domů. Pa, nashledanou.

Misha: I'm tired. Now, Menda plays the game

STE_023

Mother: It's gonna record. Let Iva hold it.

Oliver: I did it two times.

Iva: Now it's recording

Mother: Let Iva hold and just sit down (bad quality of the sound as it was being recorded outside)

Oliver: Simon is Daddy's bother. I like flowers, I like lots of flowers and trees. I like to sing myself on this thing.

Iva: OK

STE_026

Oliver is chanting a poem.

Twinkle, twinkle, little star

I wonder what you are
Up the sky so high
Like a diamond in the sky
Twinkle, twinkle, little star,
I wonder what you are.

STE_027

Mother: Why don't you say your name? My name is Olie, I'm 6 years old and I'd like to say: "I like flowers, I like trees.

Oliver: I'm Oliver Bell and I like flowers, birds and trees and I like this machine. Recorded.

STE_028 0:18

Oliver: I like my little, little garden and I hope my trees and flowers what I have on my little part of the garden. I want to recorded.

STE_030

Mostly repeating himself.

0:12 Oliver: I like to look at pictures about soldiers…I like
Iva: About soldiers?
Oliver: Yes. I like sing on this think and I like this machine.

STE_031

Oliver: This is Kája
Iva: Who is this? What about..?

Oliver: It's a dog.

Iva: Dog, and let's call him Pája.

Oliver: And the dog's name is Lily.

Iva: It's not very Czech.

Mother: Pája would be good for a dog.

Oliver: Lily.

Mother: No, no. But it's a male dog, isn't it? It's like Jája and Pája.

Iva: Kája, Pája..is it good?

Oliver: Lily, I want Lily.

Mother: The boy is Kája and the dog is Pája.

Iva: They're friends so it should be something similar. Kája – Pája.

Oliver: Lily. And the frog is Frog.

Iva: Gába. Žába Gába.

Oliver: It's Gába.

Iva: And the dog, is it Pája? Please.

Mother: If the boy is called Kája, the dog has to be called Pája, there's no way around it. Then, you would have to give the boy a different name and it wouldn't be fair as his name is Kája.

Oliver: No.

Iva: That's right. Kája and Lily. It's not very nice.

Mother: It's a male dog anyway. You cannot call a male dog Lily. Lily is a girl, isn't it?

STE_032 0:08

Oliver: And then Lily and Kája went to sleep. And the frog quietly went away from the glass. And then in the morning, he was surprised. And then he was looking in his shoes.

Mother: Who?

Oliver: Dog. Kája was looking into his shoes, then the dog Lily was looking into the glass and then Lily was looking down and (sneezing)

Mother: I don't think it's Lily.

Oliver: Pája, Pája looked for him and shouted for him.

Mother: See? It's him. It can't be Lily, because it would be her.

Oliver: Li..and Lily falled from the window and the glass went into little pieces. And then, Kája gets him and said: "You're a naughty boy."

Mother: Where's the frog?

Iva: It's gone.

1:29 – 1:46(more people speaking)

Oliver: And Kája looked into the tree, and he said : "Frog, Frog."

Iva: What's the name of the frog?

Oliver: Frog.

Iva: Gába.

Oliver: Frog Gába. And Lily said: "What are these little flies flying around?"

Mother: Does Gába not eat the flies?Does she like flies?

Iva: I'm not sure if they're flies. I'm afraid they're bees.

Mother: Oh, they're bees. Oh my God, that's worse.

Oliver: And they looked up the honey tree and he was looking at a beaver.

Mother: Beaver? Hmm

Oliver: And all of them went after the boy. And he looked into the tree and looked into the hole and the dog was running from all the bees what's… unhappy because they wer..has broked. And he found out there was a owl in there. And there, all of the.

Mother: What was the name of the owl? What's the name?

Oliver: Owl doesn't have a name and it's still recording.

Mother: Sorry.

Oliver: And the bees followed Lily. And Lily was all …and Lily was hiding next to the rock and the ..Kája climbed up on the stone.

Mother: Was he looking for the dog?

Oliver: He was looking for the frog. And he was calling: "Gája, Gája, where are you?"

Iva: It's Gába.

Oliver. Whoa… it's still recording.

Iva: Sorry, sorry.

Oliver: And it turned out to be a ….

Mother: Deer, is it a deer?

Oliver: The deer. And he was putting… he dropped them both into a… a the lake and in the lake he spotted a tree (sneeze) and he looked behind it. And then there was two frogs and one, two three…seven babies. And they all went on his hand and he was putting… and he was thrown them all in, all in...he was like that… he was (incomprehensible)with them and Lily was happy and swimming in the water. And that is the end of our recording. Book about Lily and about Kája and the frog Gába. And next time we see you at the next recording book.

Mother: That was so good, Olie.

STE_034: 00:25

Oliver: Pete went *fishing and Atchie went*

Iva: But this time you could tell it in Czech.

Oliver: It's recording you.

Iva: I'm sorry, I'm sorry. But it would be nice if you said that in Czech with English names. Would that be possible? Šlo by to?

Oliver: Tak jo. Pete šel na ryby a Atchie zavřel oči, tak se díval a a žaba se taky.

Mother: Kdo je ta žaba?

Father: Gherkin.

Oliver: It was a different name. Ká..Cami, Cami went all to the..sa..safe.

Mother: Hmm..and teď to zkusíme aj v češtině to zas, jo?

Oliver: And then the dog was and happy and then

Father: Czech, Olie!

Oliver: Pak kousla ta želva Artchieho a spadli do vody a zůstal si

Mother: A jak se jmenoval ten kluk?

Oliver: Kluk? Pete. Zahránil pejska i se želvou, ho našli a on si dlouho…doplavali na druhou stranu proti větru a pak si furt lízal...

Mother: Pacičku si lízal? A kdo si lízal pacičku?

Oliver: No Artchie. A pak šl..a pak šla žaba ho zachránit.

Mother: A jak se jmenovala ta žába, Olíšku?

Father: Gherkin…Gherkin.

Iva: Tam bylo jiný jméno.

Mother: Jak se říkalo žabě?

Iva: My mu to kazíme…

Do you want to try it in English?

Oliver: And then Pete … went and the dog as under water and the from went to hel him and then Pete went to help him and he killed the frog.

Mother: Did he, really?

Oliver: And the dog was keep, keep, keep saying his (incomprehensible) and he and put a flower there but she was again on ..and then all happily went home. And it was the same book but the same actors and that's all of the books what's we're going to record today.

11 Anotace

Příjmení a jméno:	Iva Jiřištová
Katedra a fakulta:	Katedra anglistiky a amerikanistiky, Filozofická fakulta
Název česky:	Osvojení si explosiv u angliko-českých bilingvních jedinců: Akustická studie VOT
Název anglicky:	Bilingual acquisition of Czech and English stops: An acoustic study of VOT
Vedoucí práce:	Mgr. Šárka Šimáčková, PhD.
Počet stran:	54
Počet příloh:	2 + CD
Klíčová slova v ČJ:	bilingvismus, bilingvní děti, VOT, přepínání kódů, české neznělé hlásky, anglické neznělé hlásky
Klíčová slova v AJ:	bilingualism, bilingual children, VOT, code-switching, Czech voiceless consonants, English voiceless consonants
Anotace v ČJ:	Tato bakalářská práce se zabývá osvojením si fonetických systémů u bilingvních jedinců, přepínáním kódů, tzv. code-switching,a VOT, což je interval před začátkem chvění hlasivek. Bakalářská práce je akustickou studií, jejímž základem je zvukový experiment s třemi bilingvními dětmi ve věku 4 až 6. Cílem práce je

srovnání neznělých konsonantů /p, t, k/ v češtině a angličtině, protože v těchto jazycích dohází k rozdílů právě u VOT a aspirace. Výsledky by měly ukázat, zda jsou bilingvní děti schopny použít správný fonetický systém pro dané slovo nebo zda dochází k záměně těchto systémů při přepínání z jednoho jazyka do druhého.

Anotace v AJ:

This study analyses the bilingual acquisition, code-switching and the Voice Onset Time (VOT) production in three simultaneous bilinguals aged 4 to 6. The paper is an acoustic study and is based on the experiment with the bilingual children. The aim of the study is to compare the voiceless plosives /p, t, k/ in the Czech and English language as there is a difference in a length of VOT and aspiration. The result will also reveal whether the bilingual children are capable of immediate code-switching and using the appropriate consonant sounds inventory or the two systems interfere into one another.