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The development of Czech pupils' L2 phonology assessed with a reading task

Vývoj fonologie angličtiny jako cizího jazyka u českých žáků, hodnocený dle úlohy
k přečtení

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Prohlášení autora

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

Author declaration

Hereby I declare that I created this bachelor thesis on my own, that I correctly cited all relevant literature and that this thesis was not used for the purpose of any other university study program in order to receive a degree.

Abstract

This study focuses on the impact of age of onset on pronunciation in Czech children learning English. Two groups of children were subjected to the testing – children exposed to English from nursery, and children exposed from primary school – since those two ages of onset are the most common in the Czech Republic. In each group, twenty participants aged 8 – 12 years were tested (so, in total, forty children participated). The standardised York Assessment of Reading for Comprehension methodology (YARC) was used, with a few changes to match Czech-English bilinguals. Participants were presented with a reading task. This task constituted of a single word reading test and then seven texts sorted by complexity, from which every participant read two. The whole session was recorded, and those recordings were later used for the analysis. From this reading task, accuracy and rate of participants was measured, according to the standard methodology of the YARC. Then, a thorough analysis of pronunciations was completed, in order to ascertain the mistakes the two groups made. The results revealed that it is common for Czech children to try and read an unknown English word as they would read a Czech one – with a system known as grapheme-phoneme conversion. They also revealed that there are minimal differences in pronunciation between children with early and late ages of onset. This result could be caused by two factors – either the age of onset between those two groups cognitively does not matter, or the quality of the input received in school for Czech speakers of English in the early stages is not sufficient to have an effect.

Keywords

bilingualism, age of onset, Czech language, English language, language acquisition in children, phonemes, early sequential bilinguals, late sequential bilinguals, pronunciation, phonology, English learners, Czech speakers of English

Anotace

Tato studie se zaměřuje na vliv věku, ve kterém se dítě začalo učit druhý jazyk, na výslovnost – konkrétně u českých dětí, které se učí anglicky. Testování se účastnily dvě skupiny dětí – děti, které se začaly učit anglicky již ve školce, a děti, které začaly až na základní škole – protože v České republice je nejběžnější začít s cizím jazykem v jedné z těchto dvou věkových skupin. V každé skupině bylo testováno dvacet účastníků ve věku 8–12 let (celkem se tedy zúčastnilo čtyřicet dětí). Byla použita standardizovaná metodika York Assessment Reading for Comprehension (YARC), lehce pozměněná tak, aby odpovídala česko-anglickému bilingvistu. Účastníci dostali úkol k přečtení. Tento úkol sestával z testu čtení jednotlivých slov a poté ze sedmi textů seřazených podle složitosti, z nichž každý účastník přečetl dva. Celé sezení bylo zaznamenáno a tyto záznamy byly později použity pro analýzu. Na těchto textech byla měřena přesnost a rychlost čtení účastníků podle metodiky YARC. Poté byla provedena důkladná analýza výslovnosti, která zkoumala chyby, kterých se obě skupiny účastníků dopouštěly. Z výsledků vyplynulo, že pro české děti je obvyklé zkoušet číst neznámá anglická slova tak, jako by četly česká – se systémem konverze grafém-foném. Dále se také ukázalo, že mezi oběma skupinami účastníků nejsou rozdíly ve výslovnosti příliš patrné. Tento výsledek by mohl být způsoben dvěma faktory – buďto na věku, ve kterém se dítě začne učit cizí jazyk nezáleží, nebo kvalita vyučování ve škole pro české mluvčí angličtiny v raných stádiích nedostačuje k dosažení účinku.

Klíčová slova

bilingvismus, český jazyk, anglický jazyk, jazyková akvizice u dětí, fonémy, raně sekvenční bilingvismus, pozdně sekvenční bilingvismus, výslovnost, doba působení druhého jazyka, fonologie, studující angličtiny, čeští mluvčí angličtiny

List of abbreviations

CEFR - The Common European Framework of Reference for Languages

IPA – international phonetic alphabet

MŠMT – Ministerstvo školství, mládeže a Tělovýchovy (Ministry of education, youth and sports)

RVP – rámcový vzdělávací program (framework educational program)

YARC – York Assessment of Reading for Comprehension

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1. Introduction

In today's society it is common for children to learn English as a second language from a fairly young age. However, in the Czech educational system, the age to first exposure to the second language is not unified. Some children start to learn their first foreign vocabulary already in the kindergarten, some start in the first year of primary school, some even start in the third year of primary school. In recent years, new teaching methods rose in popularity, so some people start teaching children English as a second language as early as two years of age.

This thesis deals with the effects of age of onset on second language learning, more particularly, on phonology. Considering the fact that the age of onset is not standardized in the Czech Republic educational system, the aim of this thesis is to investigate whether these differences in age of onset matter in the process of learning the pronunciation of a foreign language, and, therefore, whether the age when children first start learning English in Czech schools should be united or not. For this research, a group of children aged 8 – 12 years old were asked to perform a reading task and the phonological results were evaluated.

Effects of age of onset received a certain attention in bilingualism research. The general notion emerging from this body of research is that it is easier for younger learners to obtain native-like proficiency than it is for adults. However, it is unclear whether there really is a window in which it is ideal for a student to start learning a second language. More specifically, the strength of the effects of different ages of onset language development is not clear.

The research presented in this thesis deploys the YARC¹ methodology. The aim of this methodology is to assess reading disorders in children who speak English as their first language. The advantage of using a reading task, rather than an elicitation task, to assess pronunciation consists mainly in the fact that all children will be pronouncing the same words, making comparisons between children more reliable.

In the theoretical background, the difference between first and second language acquisition is examined, along with the study of the phenomena of bilingualism and the different views on it. In addition to that, the differences between learning how to read in

¹ Snowling, M. J., Stothard, S. E., Clarke, P., Bowyer-Crane, C., Harrington, A., Truelove, E., ... & Hulme, C. (2009). YARC York Assessment of Reading for Comprehension Passage Reading.

Czech and in English are discussed, since there are vast differences, considering that Czech has essentially a phonemic transparent system, while, in English, spelling and pronunciation differ.

In the experiment itself, the participants were presented with a reading task consisting of two parts – a single word reading test and two short texts. The whole session was recorded and said recordings were then used to determine the proficiency of the participants and common mistakes that occur in this particular test.

Participants were divided into two groups – early and late sequential bilinguals – and the aim of this thesis is to determine whether one group will perform better than the other, or whether the age of onset does not matter when it comes to learning English phonology.

2. Theoretical background

2.1 Language acquisition

Language acquisition is a long and complicated process. There are different circumstances under which language acquisition occurs: First language acquisition is a natural process that happens to every person and the rate of being successful is very high (problems only arise in children with developmental disorders, but do not arise with typically developing children). Over half of the population is brought up in a multilingual environment. Multilingual environments impact both first and foreign language acquisition. Foreign (or second) language acquisition usually occurs under various circumstances: those can be, for example, a child having a foreign caregiver; teaching in school with the help of the speakers' first language; a person moving to a different country so they have to learn a new language; and many more. All of the mentioned concepts and other significant ones will be discussed in the following chapters.

2.1.1 First Language Acquisition

Acquiring a native language is a subconscious, natural and automatic process for a learner. Considering that language is a rather complex system, the process of language acquisition raises many questions about how the linguistic competence of a child actually develops over time. To answer these questions, two major approaches emerged. The first one is the nativist or generativist approach, based on the theory of Universal Grammar, first introduced by Noam Chomsky. The other is the constructivist, emergentist, socio pragmatic functionalist, usage-based approach (Ambridge & Lieven, 2011, Cilibiasi et al., 2019).

The first, nativist approach bases its theory on the idea that some of the aspects of language are actually already encoded in the human brain at birth. This default information is also called innate linguistic knowledge. A generativist approach works with the idea that at birth children already know some general rules of language. There is a slight difference between nativist and generativist approach, but they overlap in great measure. The differences are that in a generativist approach, one can focus on formal rules and operations and think that they are not innate, or in the nativist approach one can focus on the fact that children do have some linguistic knowledge, but this knowledge is not grammar. Nonetheless, there is an important overlap between these two theories: Universal Grammar. Approaches based on Universal Grammar suggest that there is some general grammar applicable to all languages and the knowledge of this is innate. In child language acquisition,

there are proposals that are nativist but at the same time not generativist, but not vice versa. Those nativist approaches would for example be the idea that children assume that new words refer to a whole object and not a part of it. However, nativist and generativist approaches usually work together, and they will be treated as one major approach in this thesis (Ambridge, Lieven, 2011).

The other approach is the constructivist, emergentist, socio-pragmatic functionalist, usage-based one. A constructivist approach could be also called a non-nativist approach, since its proponents believe that humans have no innate knowledge of grammar. In this approach, it is still proposed that the ability to learn is innate (or biological), but not the knowledge of language structures. Constructivists believe that the most important factor for a child to acquire a language is input, and that easiest words to acquire would be the most encountered words. This approach is also non-generativist, because its advocates believe that speaking a language is not based on a set of rules, but on generalisations of previously heard constructions (Ambridge, Lieven, 2011).

“Because, under this view, the categories and procedures for sentence formations are not innate but emerge from the generalizations that children form, constructivist proposals are also sometimes termed emergentist proposals.” (Ambridge, Lieven, 2011, 3)

Part of this approach is also functional and usage-based, which means that children are driven by the need to communicate and therefore they are driven to learn a language. When syntax starts to emerge, children use mostly sentences starting with “I”, and this is driven by functional purposes. The socio-pragmatic part of this approach is based around the idea that a crucial part of learning a language is the ability to distinguish the communicative intentions of speakers or their focus of attention (Ambridge, Lieven, 2011). Most of these approaches are similar in nature, so, in this thesis, they will be treated as one major approach.

Following the theory of innatism and Universal Grammar, there are discussions about a certain critical period for language learning. According to Maria Teresa Guasti, those are periods “during which the ability to acquire the competence reaches its peak; thereafter, the ability to acquire that competence declines” (Guasti, 2017, 20). Evidence supporting this hypothesis could be the case of Genie, a feral child who was found at thirteen years old and knew no language (she was isolated by her parents in the basement of their house); later she was able to learn to communicate, but the language she was using was not as complex as

the language others use. According to researchers, Genie could not acquire language because she had not been exposed to it during the critical period.

Similar claims were made following research on deaf individuals.

“Singleton and Newport (1994) tested production and comprehension of ASL verb morphology by congenitally deaf individuals exposed to sign language from birth, from 4 to 6 years of age, or after age 12. They found that performance linearly declined with age of first exposure. Individuals exposed to ASL from birth performed better than those exposed from 4 to 6 years of age, and the latter in turn performed better than individuals exposed after age 12.” (Guasti, 2017, 20)

Language acquisition generally has a prototypical timeline. At first, children start recognising phonology, distribution of vowels and consonants and the different contrasts observed in the language of their environment. Around six up to twelve months, they start identifying first strings of sounds. Starting at twelve months, children start to add meaning to the already acquired strings of sounds. At two years, they start using their first sentences. Those progressively turn into more complex structures and mastery of complex structures such as passives usually comes around five years of age (Guasti, 2017).

It is proven that children start to get interested in language long before they start producing their first words. Some studies conducted measuring heart rate suggest that children start being interested in language already in the womb (Moon, 2017); the earliest age after birth at which children have been subjected to testing was two days old, and those tests show that, already at this age, children are able to recognise their own language and also discriminate between languages of different rhythmic classes (Gervain & Mehler, 2010). Similar testing also proved that at birth children are able to discriminate between all possible phonological contrasts, which means that they are able to learn virtually any language they would be subjected to (Kuhl, 2004). As a child gets older, the so-called learning by forgetting takes place. This term refers to the fact that after being exposed to one language, the child figures out what phonological contrasts are important for communication and forgets all the other contrasts. This is the reason why it is harder for adults to discriminate certain phonemes when learning a foreign language than it is for infants.

As previously mentioned, after the acquisition of phonology comes the acquisition of the first words. This is accomplished by statistical learning. Children get a lot of input and they hear many strings of sounds that are yet incomprehensible for them. But in those strings, children are able to find patterns, sequences that are more likely to appear than

others. By this system, they start to discriminate where spaces between words are most likely to be and they start to try using those words (Aslin, Saffran & Newport, 1998). Around the age of two years, they already have a certain number of words in their lexicon, and they start to categorise them. They start to organise their lexicon, and they add meanings to words they do not know by semantic and phonological proximity to already acquired words, which means words that are either semantically close or they sound similar (Mani, Durrant & Floccia, 2012).

After that, the syntax starts to appear. At first, children use content words to communicate. Later, they start to use short sentences starting with “I”. Those are short sentences following the usual pattern of a language (the most common across all languages is SOV – subject, object, verb pattern, closely followed by SVO). Those short sentences contain only content words, which are enough to get a message across and it shows that children are able to distinguish the basic syntactic order without explicit teaching. Later, the first function words start to appear. Around three years of age, the sentences start to get more complex and, by the age of five, children are usually able to efficiently use even relatives or passives.

2.1.2 Bilingualism and Second Language Acquisition

Defining bilingualism is a complex task, because views on the topic differ. The easy and widespread definition could be that being bilingual simply means knowing two languages. This definition however opens more questions than answers. For example, what does it mean to know a language?

According to the influential Cambridge University assessment tests, there are six levels of proficiency in a second language. These levels provide a framework, The Common European Framework of Reference for Languages: Learning, teaching, assessment, or as it is usually referred to, the “CEFR”, commonly used as an international marker of the English language proficiency. According to the booklet published by Cambridge University, “The CEFR is a framework, published by the Council of Europe in 2001, which describes language learners’ ability in terms of speaking, reading, listening and writing at six reference levels.” (Cambridge, E. S. O. L., 2011, 4). These six language levels are divided into three subcategories and go as follows:

A1 (breakthrough) and A2 (waystage) fall in the subcategory of a basic user. B1 (threshold) and B2 (vantage) fall in the subcategory of an independent user. And lastly, C1

(effective operational proficiency) and C2 (mastery) fall in the subcategory of a proficient user (Cambridge, E. S. O. L., 2011).

The CEFR does not have an official status as international standard, as the authors themselves clearly state:

“[t]he CEFR is not an international standard or seal of approval. Most test providers, textbook writers and curriculum designers now claim links to the CEFR. However, the quality of the claims can vary (as can the quality of the tests, textbooks and curricula themselves). There is no single ‘best’ method of carrying out an alignment study or accounting for claims which are made. What is required is a reasoned explanation backed up by supporting evidence [.]” (Cambridge, E. S. O. L., 2011, 4)

Nonetheless, this particular method of proficiency assessment is broadly used all around the world and many people agree that it is a rather transparent way to determine learners’ competences. For the purposes of this thesis, these language levels will be referred to.

With the knowledge of the different language levels, the question is: where is the right place to draw the line to call a person a bilingual?

For a long period of time, the prevalent opinion was that “true” bilingualism is being native-like in two or more languages. However, this phenomenon is very rare, possibly non-existent (Davison, 2009).

Current definitions differ on the level of proficiency required to “be a bilingual”:

According to the Cambridge dictionary, bilingualism is “the fact of being able to use two languages equally well“; this, however, as mentioned above, can be a problematic definition, since it is obvious that equal mastery of two languages, even from birth, is nearly impossible. On the other side of the scale is “the opposite” definition. John Macnamara proposes that the term bilingual should be used for “persons who possess at least one of the language skills even to a minimal degree in their second language” (Macnamara, 1967, 60). These are just the ends of a large scale and there are many more definitions in between. For example, there is one definition proposed by Renzo Titone, somewhat in the middle, which says that “bilingualism is the individual’s capacity to speak a second language while following the concepts and structures of that language rather than paraphrasing his or her mother tongue” (Hamers & Blanc, 2000, 6-7). In the study of bilingualism, the wide range of definitions can raise many obstacles. The intermediate definition I just provided, for example, was criticised with these words: “On the one hand, they lack precision and operationalism: they do not specify what is meant by native-like competence, which varies considerably within a unilingual population, nor by minimal proficiency in a second

language, nor by obeying the concepts and structures of that second language.” (Hamers & Blanc, 2000, 7). In addition, all the definitions provided so far refer to level of proficiency and ignore non-linguistic dimensions. Some authors have tried to solve this issue. For example, one other definition by Ajit Kumar Mohanty focuses more on the communicative aspects of language and not on the so-called proficiency. The author says that “bilingual persons or communities are those with an ability to meet the communicative demands of the self and society in their normal functioning in two or more languages in their interaction with the other speakers of any or all of these languages.” (Mohanty, 1994, 13). Some scientists even propose that bilingual individuals represent and embody some kind of exceptional competences. For example, François Grosjean “defines a bilingual speaker as more than the sum of two monolinguals in the sense that the bilingual has also developed some unique language behaviour.” (Hamers & Blanc, 2000, 7). Clearly, there is no unified outlook on bilingualism. One conciliating notion of bilingualism is that of the “bilingual continuum”. This can be summarized, as Parviz Maftoon did in his article *Who Is a Bilingual?*, with these words: “Bilingual continuum helps us realize that bilinguals enjoy varied language skills. Some bilingual individuals are able to speak and write in both languages, others are able to understand and read. Some are at an early stage of acquiring a second language; they can understand it but cannot speak it” (Maftoon, 2011, 84).

In short, a bilingual person can range from anyone who is just starting to learn a second language to a person who has been learning two languages from birth and therefore is native in both, depending on the definition one chooses. For the purpose of this thesis, the term bilingualism is defined as an at least basic proficiency in speaking two or more languages – on the Cambridge University scale a person proficient at least on a A2 level or more – no matter when the speaker started learning either of their languages.

2.1.3 Age of onset effects in bilingualism

When defining bilingualism, the difference between simultaneous and sequential bilingualism needs to be explained. Simultaneous bilingualism occurs when the speaker learns all their languages from birth. Sequential bilinguals on the other hand start learning other languages after they have already acquired a bit of their mother tongue.

When it comes to sequential bilingualism, people learn a second language under different circumstances, and these can be categorised. According to Alexandra Gottardo and Amy Grant,

“elective bilinguals learn another language in a formal setting, typically as an additional course credit at school, while continuing to use their L1 most of the time. They are also classified as “additive bilinguals” because the L2 is learned in addition to an L1 that is maintained at a high level. Circumstantial bilinguals, however, learn their L2 because they are required to do so to attend school or to find work. They are usually immigrants learning the societal language. These bilinguals are often classified as “subtractive bilinguals” because L1 skills usually decrease or are lost in favour of the majority language, the L2. Subtractive bilingualism is particularly common in children of immigrants.” (Hamers & Blanc, 2000, 2).

Depending on the age of onset, learning a foreign or second language can be a fairly unconscious process. With younger children, the possible proficiency can even turn out native-like. “Researchers are discovering that sensitive periods for native-like L2 acquisition occur at younger ages than previously believed. For example, brain organization is different for L2 acquisition after 5 years of age in contrast to before age 5, when native-like organization for language is possible” (Davison, 2009, 2).

For the purpose of this study, different types of sequential bilingualism will be discussed. As mentioned previously, if a speaker starts learning all of their languages at the same time (right after birth), they are a simultaneous bilingual. A child that started learning a second language in the kindergarten will be denoted as an early sequential bilingual. A child that started in school, either in the first grade or in the third (in Czech schools, somewhere around 7-9 years of age) will be defined as a late sequential bilingual.²

Age of onset is the age in which a learner first comes into contact with their second language. A number of studies have focused on the native-likeness of the knowledge of the second language, and, according to some, with enough input, even if the child is not a simultaneous bilingual, they can turn out proficient enough to be recognized as a native speaker (Unsworth et al., 2011). This occurs, sometimes, when the parents move to a different country early on in the child’s life, or when the child has a non-native caretaker and has to find a way to communicate. However, many argue that “attainment of nativelylike proficiency is, in principle, impossible.” (Abrahamsson & Hyltenstam, 2009, 249). There is no clear answer to whether nativelylike is possible or not, and there have been many discussions as to whether there is a critical period before which it is possible to acquire a second language in a nativelylike way.

² This study does not focus on later ages of onset, but a person who started learning a second language later than in the fifth grade (so around the 11th year of age) would be defined as a second language learner.

A great number of studies have been conducted to figure this out. In pioneering work, Johnson and Newport (Johnson & Newport, 1989) showed that younger speakers are better in acquiring their second language in a native like way. Participants of those studies were people who moved to a different country and were forced by circumstances to learn a new language. It must be noted, though, that participants in these original studies were selected randomly. However, when the same methodology was replicated later on by various researchers with more carefully selected participants, nativelikeness could be found in adult learners as well.

“What these replications have in common is that the selection of participants departs from the original study in some crucial ways, the two most important adjustments being, first, the extension of the minimum length of residence in the host country, from J&N’89’s 5 years to at least 10 years, and, second, the choice of participants with L1s other than Chinese and Korean.” (Abrahamsson & Hyltenstam, 2009, 252)

One of the replications focused on, among other things, pronunciation. While in other domains the authors found some participants who performed like natives, “in pronunciation tests, they found no L2 participants with AO above 9 who spoke English without a detectable foreign accent.” (Abrahamsson & Hyltenstam, 2009, 252)

One could then say that, under certain circumstances, it is possible or even common to attain a native-like proficiency in a second language, but pronunciation seems to be a particularly difficult domain to master. Judging by the studies examined in the paper by Abrahamsson and Hyltenstam, “postpuberty (including adult) learners may well attain the same linguistic knowledge and exhibit the same linguistic behavior as native speakers in certain (limited) areas of the target language without thereby being indistinguishable from mother-tongue speakers in all relevant respects.” (Abrahamsson & Hyltenstam, 2009, 253). It should be stressed that the only late bilinguals who attained a native-like proficiency were carefully selected high-proficiency L2 speakers. In other words, it is possible to become proficient enough as an adult learner to become native-like, but it is clear from the studies conducted that this is very uncommon, and that it is easier for younger speakers to become more proficient.

In 1999, Alene Moyer (Moyer, 1999) performed a study focussing specifically on pronunciation. She used four different techniques to determine the possibility of becoming native-like in the German language and, for the study, 24 highly proficient American students of German were recruited. Participants were subjected to word-list reading, sentence reading, paragraph reading and free speech production. The proficiency was then

judged by four native speakers of German. Only in one of the four tasks, word-list reading, some of the participants were able to perform as native speakers. But in the other three, most participants failed. There was only one participant among the 24, who passed in all four tasks. With this, Moyer's study uncovers a problem with the previously mentioned studies. The previous ones focused mostly on reading rehearsed parts of text, however, when free speech production is added, the results start to differ (Abrahamsson & Hyltenstam, 2009).

In the year 2008, a study focused on reading was carried out by Kovelman, Baker and Petitto. The objective of their study was similar to the one of this thesis: figure out whether the age of onset matters. The study focused on pupils in bilingual (English-Spanish) schools, which provided two types of participants: English speakers from monolingual English speaking homes exposed to Spanish and Spanish speakers from monolingual Spanish speaking homes exposed to English. Their results were compared to students from English monolingual schools. The study showed that "An early age of first bilingual language exposure had a positive effect on reading, phonological awareness, and language competence in both languages: early bilinguals (age of first exposure 0–3 years) outperformed other bilingual groups (age of first exposure 3–6 years)" (Kovelman, Baker, Petitto, 2008, 203). It was then concluded that attending bilingual school (i.e. early exposure to different phonemic structures from a young ages) helped children even in monolingual homes to become more proficient in a second language and their reading skills in said second language were better than those of children from monolingual schools.

It can then be concluded that age of onset does matter when it comes to learning a second language and, in particular, it does have an effect on the development of phonology and reading skills. None of the previous studies, however, focused on Czech learners of English, and that is what this thesis will be dealing with.

2.1.4 Teaching English in Czech schools

When learning of English as a second language occurs inside of a classroom, one may talk of instructed second language acquisition (ISLA). Alternative terms are "guided," "tutored," or "formal" SLA" (Loewen, 2013, 1). The main and defining feature of ISLA is that it also relies on the effort of teachers, and at least some instructional material is present. "The value of L2 instruction has been debated, with some theorists claiming that although instruction may help people learn explicit rules about the target language, it has little impact

on learners' ability to use the L2 for communicative purposes" (Loewen, 2013, 1). Other scholars disagree and claim that grammar teaching does affect the way learners acquire their second language. This contrast has sparked a further debate on whether more emphasis should be placed on communication in L2 teaching in contrast to teaching grammar. (Loewen, 2013)

There are several methods used in L2 teaching. One of the earlier methods used is the grammar translation method. The basis of this method is that the students are "taught to translate from native language to target language" (Natsir, 2014, 59), they "learn grammar deductively" (Natsir, 2014, 59) and they "memorize native language equivalents for the target language vocabulary" (Natsir, 2014, 59). The most emphasis is put on grammar and vocabulary and with that also reading and writing skills, so this method is not very relevant to this thesis and phonological skills. This method was soon to be proved ineffective. It can be applied for teaching dead languages or to translate foreign literature, but as a method to teach English with the aim to be able to communicate, this method seems inefficient.

Another method is the audio-lingual method, emerged sometime in the 1950's. This method focused more on imitation, since it was a consequence of the study of behaviourism. It uses habit-formation drills or pattern practice in order to master certain sentences, phrases or patterns. Not only can it help with memorising patterns, but it can definitely have positive effects on pronunciation. After more studies were carried out, this methodology was not used in its original form after the 1970's. This is because, according to Loewen, in the early 1980's the importance of more naturalistic approaches was gradually recognised, so pieces from different methods were implemented into teaching. Nonetheless, some components of this method are still used, as explained by Ahluwalia (2019, 162): "However, one of the main components of audio-lingualis – language drilling – [...] is still used in many lessons because many teachers and students believe that frequent repetition is a key to successful learning."

More interaction was first seen in the so-called natural approach. In this approach, the main rules are acquired as they would be in a first language acquisition - the learner has to figure everything out from communication. It is not expected of the students to be immediately perfect, but the input tends to get varied in order to increase complexity. "If communicative competence is an immediate goal, we must establish as quickly as possible a large lexicon with very general syntax rules. Vocabulary acquisition is relatively simple. It also gives the student the ability to comprehend utterances and at least some ability to

respond in real communicative situations” (Terrell, 1977, 327). Not only is this method beneficial for communicative purposes, it can also help with a more implicit acquisition of phonology.

The last approach that will be discussed is the communicative language teaching approach. This approach is also mainly focused on helping with interaction and the emphasis on explicit grammar teaching was tuned down. With this method, “everything is mostly done with communicative intent” (Natsir, 2014, 59), “students use the language through communicative activities such as games and role-plays”, (Natsir, 2014, 59) “activities are often carried out by students in [a] small group” (Natsir, 2014, 59) and “grammar is taught inductively”(Natsir, 2014, 59). Same as with the natural approach, this method can be beneficial for an implicit acquisition of phonology and pronunciation.

In the Czech education system, the MŠMT (Ministry of education, youth and sports) provides a rough schedule on what should be ideally acquired in every school year in all Czech schools. Every school works with it differently and makes its own plans, but the aim is usually the same: the pupils should achieve a certain proficiency outlined by MŠMT in every subject at the end of every stage of their school life. Since this thesis is focusing on children aged 8 to 12, we will have a look at the ministry advices on the lower and higher level of primary education.

The lower level of primary education in Czech schools consists of five years of studies from the age of 6 to 10-11. In many Czech schools, English is taught from the first grade, but it is not necessary to start as early. The set standard is that the latest pupils should start learning a foreign language (which in Czech Republic is mostly English) in the third grade. According to the Czech Framework of Education, what is supposed to be acquired in the lower level is what follows (for the actual translation of the full ministry guidelines see the appendix):

The framework includes a summary for speaking skills, listening skills, communication skills, understanding of a written text and writing skills. For speaking skills, the expected outcome is knowing the basics of the sound of the English language, even if the learner does not understand everything. The minimal requirement for listening skills is understanding the teacher’s commands and understanding basic vocabulary and phrases that were taught. For speaking, the pupil should be able to greet someone and say thanks, state their name and age and be able to vocalise agreement or disagreement. When reading, the minimal

expected skills are understanding basic vocabulary (that was taught). Regarding writing skills, the pupil should only be familiar with how the foreign language looks like in the written form.

2.2 English Phonology

2.2.1 Differences between Czech and English phonemes

There are some major differences in the Czech and English phonological system. That is partly why it is hard for Czech beginners to pronounce English with a standard English pronunciation. Both vowels and consonants differ in the two languages, though the differences are larger with vowels. In the next section both vowels and consonants will be discussed.

Here are the two tables of consonants, the first one is for the Czech language (Table 1) and the second one is for English (Table 2). For creating these tables, information from Skarnitzl & Šturm & Volín (2016), Roach (2010) and Brinton & Arnovick (2006) was taken.

Table 1- Czech consonant system

		place of articulation						
		bilabial	labio-dental	alveolar	post-alveolar	palatal	velar	glottal
manner of articulation	nasals	m	(m̥)	n		ɲ	(ŋ)	
	plosives	p b		t d		c ɟ	k g	(ʔ)
	affricates			ʦ ʣ	ʧ ʤ			
	fricatives		f v	s z	ʃ ʒ		x (χ)	h
	trills			(r̥) r r				
	lateral approximants			l				
	approximants	(w)				j		

Table 2 - English consonant system

		place of articulation							
		bilabial	labio-dental	dental	alveolar	post-alveolar	palatal	velar	glottal
manner of articulation	nasals	m	(ɱ)		n			ŋ	
	plosives	p b		θ ð	t d			k g	ʔ
	affricates					tʃ dʒ			
	fricatives		f v		s z	ʃ ʒ			h
	lateral approximants				l				
	approximants	w					r	j	

The first obvious difference that can be noted is that in Czech there are no phonemes that would be articulated in dental position. This means that native Czech speakers need to learn the consonants /θ/ and /ð/ additionally to the already acquired sounds. Those are two of the more problematic sounds for Czech speakers since these do not naturally produce any dental sounds.

In the tables above, right next to the column with dental phonemes is a column with alveolar phonemes. There it can be seen that alveolar affricates (/tʃ/ and /dʒ/) are found only in the Czech language and not in the English language. The /tʃ/ and /dʒ/ sounds can sometimes occur in English speech when a Czech learner is not sure how to pronounce certain words. Similarly, the sounds /x/, /c/, /j/, /fi/ and /ɲ/ are specific to Czech and not English and can sometimes appear when Czech speakers do not know how to pronounce certain words correctly.

The phoneme /fi/ is mentioned as typical for the Czech consonant system. This phoneme is classified as a glottal fricative, and the phoneme /h/ can be found in the same space in the table of English consonants. That is because /fi/ is voiced and /h/ is devoiced, but both are glottal fricatives. Learning to devoice this sound is generally not a big issue for Czech speakers and it does not cause significant problems of pronunciation.

The last difference in the consonant system is the pronunciation of the letter r. After looking into the two tables, one can spot a significant difference. While in English, the letter r is pronounced as a post-alveolar approximant, in Czech, there are several sounds, but those can all be found in the spot of an alveolar trill. Trills are not a part of the English consonant

system, however Czech speakers are used to this sound and can be inclined to use it instead of a post-alveolar approximant. In Czech, there are one devoiced and two voiced versions of this sound.

More significant differences can be found in the system of vowels, and that is demonstrated in the following tables (Table 3 and 4).

Table 3 – Czech vowel system

i: ɪ	u:/u
	o:/o
ɛ:/ɛ	
	a a:

Table 4 - English vowel system

i:	u:
ɪ	ʊ
ɛ e	ɜ:
æ	ɑ: ɒ

At first glance, it may look like there are more sounds in the English table. The truth is however that there are only two sounds more in English (there are 12) than there are in Czech (there are 10). This impression is due to the fact that the English vowels are more dispersed through the quadrilateral than the Czech ones. As it can be seen, in Czech there are actually only seven possible places where a vowel can be pronounced and there are three pairs of a long and a short vowel (those are pronounced in the same place, the only difference is the length). So, if those are counted as one and the same sound, it can be said that there are four vowels in Czech that cannot be found in English. Similarly to what happens with Czech consonants, these vowels are frequently used by Czech speakers when they are unsure about the correct pronunciation of a word.

On the other hand, there are nine vowels in the English system that are not acquired naturally in Czech. These nine are: /ʊ/, /e/, /ɜ:/, /ɛ/, /ɔ:/, /ʌ/, /æ/, /ɒ/ and /ɑ:/. It can take quite some time and effort for Czech speakers to learn how to pronounce those properly.

2.2.2 Learning how to read in Czech and English

This study of phonology is conducted by means of a reading task, thus the main procedures invoked to read in these two languages will be presented. There are some major differences in reading these two languages, which is why there are different approaches in learning how to read across the two countries. Generally, there are two approaches on how to read languages that use the Latin alphabet. To demonstrate this, the so-called “dual route model of word recognition”, created by the psycholinguist Max Coltheart, will be introduced (Coltheart, 1994).

The model consists of a depiction of two different routes that people use to decode words: the grapheme-phoneme route and the lexical (or lexical-semantic) route.

The grapheme-phoneme route works on the basis of reading a graphic symbol and transforming it into a specific sound assigned to it. The lexical route takes a word as a unit and to this unit a specific set of sounds is assigned; this set of sounds usually does not correspond to the specific graphemes used in the written version of the word (i.e. the word would not be read correctly if the grapheme-phoneme route was used instead). Take for example the sequence of symbols “ough” in English, which receives different pronunciation depending on the word and cannot thus be read by simply transforming each symbol into a phoneme.

The first route is the one used more heavily by Czech speakers, since Czech has an orthography that is phonetically transparent, so it is the route that is taught to Czech children in schools. However, since English uses heavily the other route as well – the lexical semantic – reading in English may cause problems for Czech speakers of English.

In this specific research, the participants could possibly make mistakes in either of those routes. The interpretation of their mistakes follows this logic: If they make a mistake in a certain specific phoneme, they are making a mistake in the grapheme-phoneme route, if they read a completely different word than the one that is written down, the mistake is happening in the lexical route.

Interestingly, because of the two very different routes used normally in the two languages, the easiest way to learn how to read English for a Czech learner is to transform the word via the grapheme-phoneme route. For this purpose, there are even special notebooks sold for writing down English vocabulary. These notebooks have three columns in them – one for the English word, one for the Czech translation and a third one for the pronunciation. Teachers either write down an approximate pronunciation using the Czech grapheme system, or they teach the kids IPA (the phonetic alphabet). In other words, at the initial stage of learning, the grapheme-phoneme route is used also for opaque English words. Once the right pronunciation settles, the learner has to use the lexical route to memorize the appearance of the word as a whole.

Both types of mistakes appeared in the current research and they will be discussed in detail in the analysis section.

3. Material and methods

3.1 Groups of participants

The general idea for this research was to explore the difference in reading between two groups of Czech children learning English. Since it is mandatory to start learning a foreign language in the third grade in Czech republic, but it is also common for kindergartens to have earlier English courses for children, I became interested in the idea of investigating whether starting to learn a foreign language earlier than is recommended by the Czech education system has any benefits for the learner. For this particular research, I decided to explore the effects of age of onset on phonology, or, more precisely, if starting to learn English in kindergarten has any positive effect on pronunciation.

The study comprises two groups, the kindergarten group, and the school group. As the name suggests, the kindergarten group were children who started learning English while still in kindergarten, while the school group were children who started learning English in primary school. The kindergarten group could also be called “early sequential bilinguals” and the school group “late sequential bilinguals”, since the notion of bilingualism adopted in this thesis is rather ample (see section 2.1.2). Within the school group children either started learning English in their first year of school or in their third.

In total, forty-three participants took part in the research. Later on, three children had to be removed for various reasons – one participant had a speech impediment which is not explored in this research, and two others did not want to finish the reading. After that, forty participants were left – twenty in the kindergarten group and twenty in the school group.

These participants were recruited from various sources – an English oriented summer camp, children from third to fifth grade in základní škola T. G. Masaryka in Rokycany, a group of first year students on Gymnázium Rokycany or home-schooled children. All participants were between the ages of 8-12 at the time of carrying out the research. The study is part of the Primus research project on bilingualism (csbc.ff.cuni.cz) and it has received ethical approval to be conducted by the Charles University Ethics Committee.

3.2 Hypothesis

Considering all the research papers included in the theoretical part of this thesis, it could be said that, generally speaking, the sooner a speaker is exposed to a second language, the better they are at learning it. This is particularly true for phonology and pronunciation,

which appear to be a particularly dependent on age of onset. I carried out this research with the assumption that this would also be the case for Czech speakers, thus my hypothesis is that an earlier age of onset will correspond to a more native-like pronunciation.

3.3 Materials and methods used for the testing

For the practical part of this thesis, a reading assessment was used. I used a standardized test, so that the participants had a text that would be appropriate for their level of English. Crucially, the use of a standardised test additionally ensured that each participant read the same texts as other participants, making results comparable (both within my sample, but also comparable to the large body of data assessed by the creators of the task). The standardized test I used is the York Assessment of Reading for Comprehension Passage Reading, created by Margaret J. Snowling, Susan E. Stothard, Paula Clarke, Claudine Bowyer-Crane, Angela Harrington, Emma Truelove, Katie Nation and Charles Hulme (Snowling et al., 2009). This methodology consists of a manual, a form with some texts for the participants, a record form and a single word reading test.

In order to decide the level of English, I used a single-word reading test. This is a test consisting of sixty words, divided into six groups, depending on the complexity of their pronunciation: The first group is the easiest and the sixth group is the hardest to read. Children were asked to read all the words without help, or as many as they think they know. If they did not know a word, they were asked to move on to the next one. They were given the opportunity to try and read all the words, but if the task was revealing too challenging or frustrating, they were allowed to stop. Then the total number of correctly pronounced words was calculated, and based on the final number, each participant was assigned a text (Table 5).

Table 5 - SWRT results levels

<i>Single Word Reading Test (SWRT) Raw Score</i>	<i>Starting passage level</i>
<i>Below 19</i>	Beginner Level
<i>19-24</i>	Level 1
<i>25-30</i>	Level 2
<i>31-37</i>	Level 3
<i>38-41</i>	Level 4
<i>42-47</i>	Level 5
<i>Above 48</i>	Level 6

After getting an assigned text, each of the participants was asked to read the text as well as they were able to, without any help. Any mistakes were recorded into a record sheet and after that, the mistakes were calculated. Depending on the number of mistakes, the participant was asked to read one more text, either one level higher, or one level lower. After each text, the participants were asked to answer eight questions regarding the text to assess reading comprehension. Comprehension was not included in the data analysis, since assessing comprehension was not among the purposes of this thesis. However, a relative measure of their understanding of the text was still useful during testing to decide whether to increase or decrease text level after the first reading. Finally, the rate at which the participant read the texts was recorded and then compared to standardised values. The participants were also given a short questionnaire in which they answered some questions about their age, their age of onset and their relationship to learning English.

The whole session was recorded. I then used those recordings to write down the wrong pronunciations using the IPA and to categorise them into six groups – mispronunciations, substitutions, refusals, additions, omissions, and reversals. With this information I then created several tables containing the different pronunciations and numbers of the mistakes. For assessing crucial results, I used different statistical tools. These results will be presented in the next chapter.

There are seven different texts ranging in complexity in the YARC. The first text was a “beginners’ text”, the other six were numbered, text 1 being the easiest and text 6 being the hardest. As an example, I chose to include text 2 here, since many of the participants read this text in particular:

The robin is a bird with a bright red face neck and breast. You can find it in gardens, parks and woods all year round.

Robins make their nests in a hole in a tree stump, bank or wall. Sometimes they nest in pots, or even the pockets of an old coat. Their eggs are pale with reddish spots.

Robins like to feed on insects and worms. They also eat seeds, berries and food scraps.

Cats are the main danger to robins, but robins are also a danger to each other when they fight over food and land.

4. Analysis

Both quantitative and qualitative analyses were used in this thesis. For the quantitative analysis, I used multiple statistical tools. Because substitutions and mispronunciations were far more common mistakes than the others, they were the only two kinds of mistakes explored in the quantitative analysis. First, I used a two-factor Anova with replication, having type of error (substitutions vs mispronunciations) and group (school vs kindergarten age of onset) as factors (Table 6).

Table 6 - Anova

Source of Variation	SS	df	MS	F	P-value	F crit
<i>Group</i>	17,113	1	17,113	0,454	0,503	3,967
<i>Type</i>	7050,013	1	7050,013	186,837	p<.001	3,967
<i>Interaction</i>	78,013	1	78,013	2,067	0,155	3,967

This analysis first shows that there is a highly significant difference between the number of substitutions and the number of mispronunciations ($p < .001$). Second, the analysis also shows a tendency in the interaction between the two groups ($p = .1$). That means that even though the p-value is not significant, the type effect may show some subtle differences between the two groups. The group effect was not significant, meaning that overall both groups committed a similar number of errors ($p = .5$).

Following the tendency in the interaction, I tried to determine the differences between the two groups in the two most common type of mistakes – the substitutions (Table 7) and the mispronunciations. For that I used two sample t-tests, assuming equal variances.

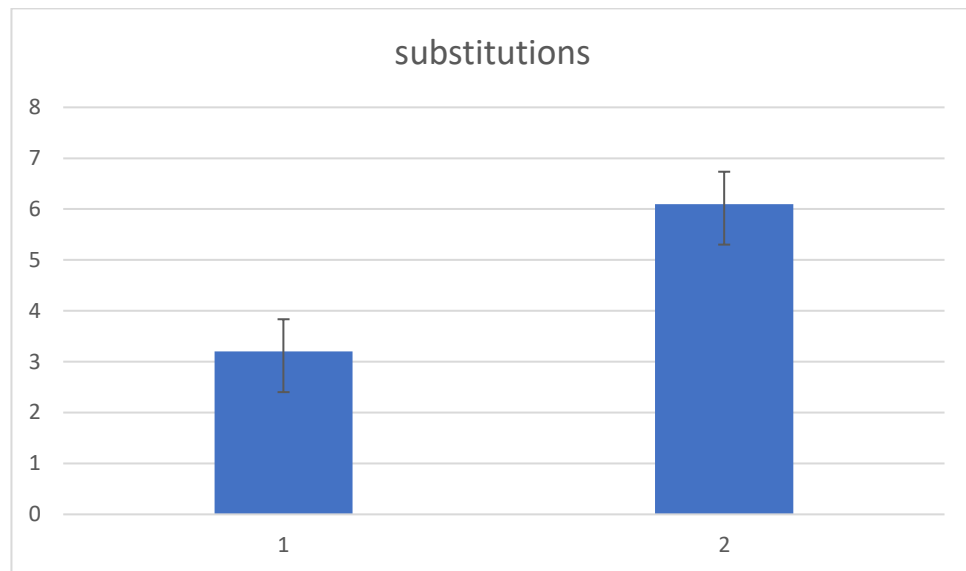
Table 7 - substitutions t-test

t-Test: Two-Sample Assuming Equal Variances

	<i>Variable 1 (kindergarten)</i>	<i>Variable 2 (school)</i>
<i>Mean</i>	3,2	6,1
<i>Variance</i>	8,063	12,726
<i>Observations</i>	20	20
<i>Hypothesized Mean Difference</i>	0	
<i>df</i>	38	
<i>t Stat</i>	-2,844	
<i>P(T<=t) two-tail</i>	0,007	
<i>t Critical two-tail</i>	2,024	

I then used an illustrative graph to also demonstrate the means with a visual. I counted numbers for the standard error and used those numbers to calculate the length of the error bars in the graph (Graph 1).

Graph 1 – substitutions (group 1 = kindergarten, group 2 = school)



As it can be seen when comparing the means in the table and also in the attached graph, when it comes to substitutions on average there were less mistakes in the group that started to learn English sooner. The p-value is smaller than 0,05, which means that the null hypothesis can be rejected (null h. = the results for both groups would be the same). So, it can be concluded that, when focusing on substitutions, the kindergarten group performed significantly better than the school group.

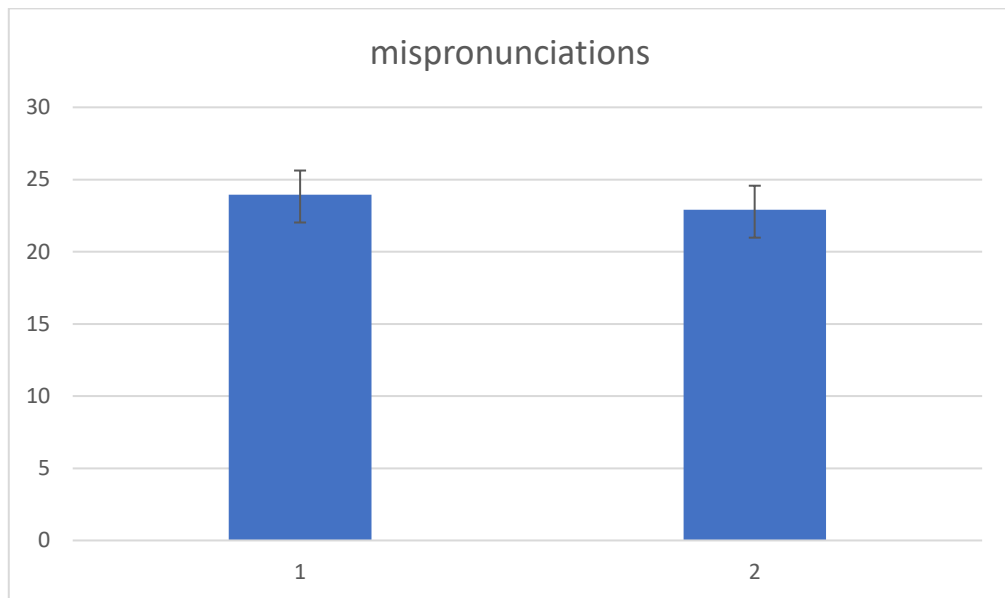
When it comes to mispronunciations, the difference between the two groups is not as big as with the substitutions (Table 8). In the case of mispronunciations, the school group was performing better, as can be seen in the table and in the graph; however, the p-value is too big for the result to reject the null hypothesis. So, in this case, the difference between kindergarten and school groups was not significant.

Table 8 - mispronunciations

t-Test: Two-Sample Assuming Equal Variances

	Variable 1	Variable 2
Mean	23,95	22,9
Variance	55,94473684	74,2
Observations	20	20
Hypothesized Mean Difference	0	
df	38	
t Stat	0,41161481	
P(T<=t) two-tail	0,682934285	
t Critical two-tail	2,024394164	

Graph 2 – mispronunciations (group 1 = kindergarten, group 2 = school)



4.1 Early sequential bilinguals

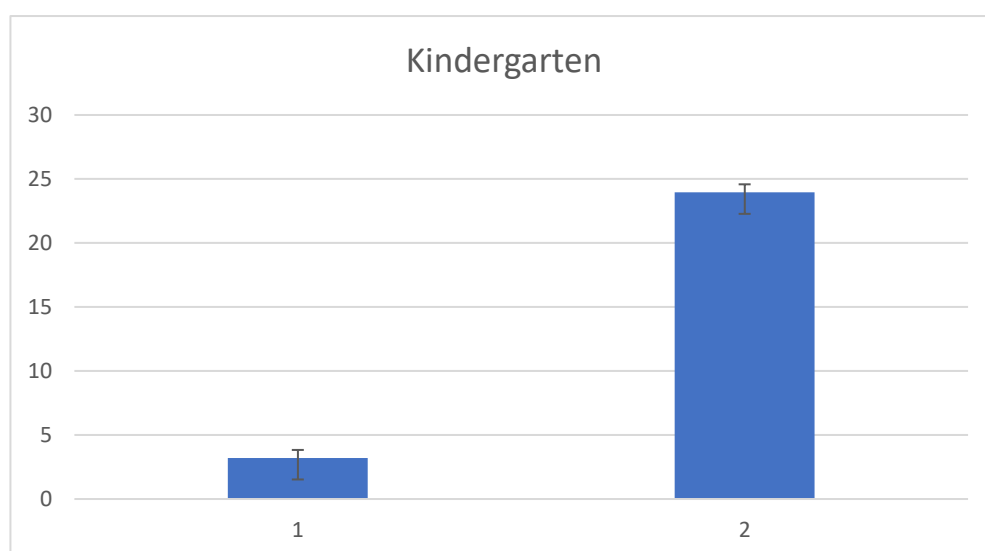
I also became interested in how the groups performed in general. I ran a t-test for the kindergarten group regarding the difference between substitutions and mispronunciations (Table 9).

Table 9 - early sequential bilinguals

t-Test: Two-Sample Assuming Equal Variances

	Variable 1 (substitutions)	Variable 2 (mispronunciations)
Mean	3,2	23,95
Variance	8,063	55,945
Observations	20	20
Hypothesized Mean Difference	0	
df	38	
<i>t</i> Stat	-11,599	
<i>P</i> (<i>T</i> ≤ <i>t</i>) two-tail	4,74E-14	
<i>t</i> Critical two-tail	2,024	

Graph 4 - early sequential bilinguals (kindergarten group)



The difference between the means in the table and the graph (Graph 3) show that there is a big difference between substitutions and mispronunciations, with mispronunciations being a more common mistake. The very small p-value shows a high significance, so the null hypothesis can be rejected, and it can be said that there is a significant difference between substitutions and mispronunciations in the early sequential group.

4.2 Late sequential bilinguals

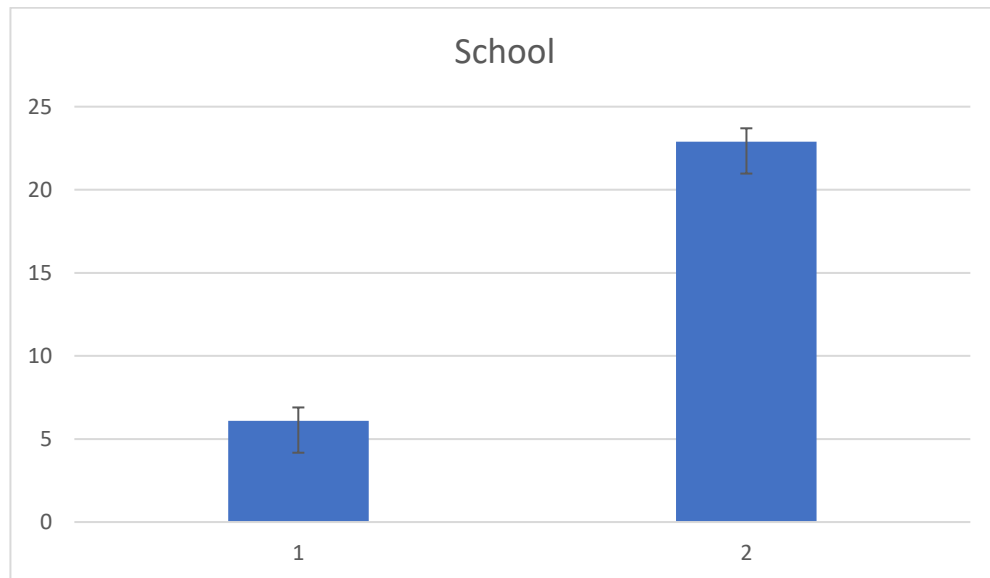
The same t-test was used to determine difference between substitutions and mispronunciations in the school group (Table 10; graph 4).

Table 10 - late sequential bilinguals

t-Test: Two-Sample Assuming Equal Variances

	<i>Variable 1 (substitutions)</i>	<i>Variable 2 (mispronunciations)</i>
<i>Mean</i>	6,1	22,9
<i>Variance</i>	12,726	74,2
<i>Observations</i>	20	20
<i>Hypothesized Mean Difference</i>	0	
<i>df</i>	38	
<i>t Stat</i>	-8,058	
<i>P(T<=t) two-tail</i>	9,55E-10	
<i>t Critical two-tail</i>	2,024	

Graph 5 - late sequential bilinguals (school group)



Even though the difference between the two items is not as big as with early sequential bilinguals, also with this contrast there is an obvious higher number of mispronunciations. Because the p-value is below 0,05 again, it can be said that the result is significant, and the null hypothesis can be rejected. As with early sequential bilinguals, the late sequential bilinguals produced significantly more mispronunciations than substitutions.

4.3 Wrong pronunciations

In order to analyse in detail wrong pronunciations, I used qualitative analysis. I listened to all the recordings and wrote down all the wrong pronunciations in the international phonetic alphabet. I then created several tables with the different ways kids pronounced each particular word. There were several tables for the mispronunciations – two for each of the seven texts (there were no participants from the school group who read text 3 and text 6) split by the two groups; tables for the substitutions - split the same way; and lastly, tables with the rest of the mistakes – omissions, additions and refusals (those were not as common as substitutions and mispronunciations, but they did occur in several instances). I then merged a few of the tables for the ease of read.

4.3.1 Mispronunciations

When it comes to mispronunciations, there are two types of mistakes. Either the participant made a mistake in only certain phonemes, or they made up a whole new pronunciation for the whole word. This second choice is probably caused by them not knowing the word and trying to relate what they read to words they know. In many instances, the participants just read the words in the way they would in Czech – phoneme-grapheme translation with Czech pronunciation. All the different ways the participants mispronounced words can be found in the tables below (Tables 11-18). For ease of read, I am only reporting errors that occurred more than once in the first three texts (the full tables can be found in the appendix):

Table 11 - beginners text

<i>group</i>	<i>word</i>	<i>pronunciation</i>	<i>no. of occurrences</i>
<i>kindergarten</i>	into	ɪntə	4
<i>kindergarten</i>	a	a	3
<i>kindergarten</i>	anna	ɛjn	2
<i>kindergarten</i>	dad	dʌd	2
<i>kindergarten</i>	hall	hɑ:l	2
<i>kindergarten</i>	outfit	oʊtfɪt	2
<i>kindergarten</i>	put	pʌt	2
<i>school</i>	into	ɪntə	8
<i>school</i>	to	tə	7
<i>school</i>	anna	ɛjn	4
<i>school</i>	hall	hʌl	4
<i>school</i>	a	a	3
<i>school</i>	had	hʌt	3
<i>school</i>	outfit	oʊtfɪt	3
<i>school</i>	and	ʌnt	2
<i>school</i>	outfit	oʊtfɪt	2
<i>school</i>	tea	te:a	2

Table 12 - text 1, kindergarten group

<i>group</i>	<i>word</i>	<i>pronunciation</i>	<i>no. of occurrences</i>
<i>kindergarten</i>	smaller	smʌlr	12
<i>kindergarten</i>	was	vez	12
<i>kindergarten</i>	hug	høk	9
<i>kindergarten</i>	was	vʌz	8
<i>kindergarten</i>	clicked	klɪket	7
<i>kindergarten</i>	cloud	kloʊt	6
<i>kindergarten</i>	looked	løkɪt	6
<i>kindergarten</i>	a	a	5
<i>kindergarten</i>	bumped	bʊmpɪt	5
<i>kindergarten</i>	replied	replɪ:t	5
<i>kindergarten</i>	shut	ʃʊt	5
<i>kindergarten</i>	asked	ʌksət	4
<i>kindergarten</i>	bumped	bʌmpɪt	4
<i>kindergarten</i>	he	he:	4
<i>kindergarten</i>	Jack	jʌtsk	4
<i>kindergarten</i>	suddenly	sʊdnɪli	4
<i>kindergarten</i>	was	vɪz	4
<i>kindergarten</i>	gave	geɪv	3
<i>kindergarten</i>	just	dʒʌst	3
<i>kindergarten</i>	looked	løkɪt	3
<i>kindergarten</i>	out	aʊt	3
<i>kindergarten</i>	trembled	trɛmblɪt	3
<i>kindergarten</i>	trembled	trɛmblɪ:t	3
<i>kindergarten</i>	what	wʌt	3
<i>kindergarten</i>	asked	ɛskɪt	2
<i>kindergarten</i>	asked	ʌskɪt	2
<i>kindergarten</i>	away	əweɪ	2
<i>kindergarten</i>	became	bɪkæm	2
<i>kindergarten</i>	before	bɪfɔr	2
<i>kindergarten</i>	bumped	bʌmbɪt	2
<i>kindergarten</i>	clicked	klɪndʒɪnt	2
<i>kindergarten</i>	flown	flaʊn	2
<i>kindergarten</i>	flown	flaʊn	2
<i>kindergarten</i>	going	gɔɪnk	2
<i>kindergarten</i>	had	hʌd	2
<i>kindergarten</i>	him	hɪm	2
<i>kindergarten</i>	never	nevər	2
<i>kindergarten</i>	people	pi:pl	2
<i>kindergarten</i>	people	peəpl	2
<i>kindergarten</i>	replied	replɪ:et	2
<i>kindergarten</i>	replied	replɪt	2
<i>kindergarten</i>	smaller	smʌlɪr	2
<i>kindergarten</i>	that	ðʌt	2
<i>kindergarten</i>	the	ði	2

Table 13 - text 1, school group

<i>group</i>	<i>word</i>	<i>pronunciation</i>	<i>no. of occurrences</i>
<i>school</i>	was	vʌz	27
<i>school</i>	was	vez	13
<i>school</i>	clicked	klɪkɪt	12
<i>school</i>	smaller	smʌlər	11
<i>school</i>	asked	ʌskɪt	9
<i>school</i>	bumped	bʌmpɪt	8
<i>school</i>	cloud	kləʊt	8
<i>school</i>	looked	ləkɪt	7
<i>school</i>	a	a	6
<i>school</i>	hug	hʊk	6
<i>school</i>	replied	replɪ:t	6
<i>school</i>	suddenly	sʊdnɪ	6
<i>school</i>	trembled	trembled	6
<i>school</i>	he	he	5
<i>school</i>	just	dʒʊst	5
<i>school</i>	looked	ləkɪt	5
<i>school</i>	out	əʊt	4
<i>school</i>	what	vʌt	4
<i>school</i>	before	bɪfə	3
<i>school</i>	before	bɪfɪ	3
<i>school</i>	bumped	bʌmpɪ:d	3
<i>school</i>	flown	fləʊn	3
<i>school</i>	looked	ləkɪt	3
<i>school</i>	mum	mʌm	3
<i>school</i>	replied	replɪt	3
<i>school</i>	replied	replɪdʒɪt	3
<i>school</i>	shut	ʃʊt	3
<i>school</i>	smaller	smɑ:lɪ	3
<i>school</i>	asked	ɛskɪt	2
<i>school</i>	became	bɪkʌmɪ	2
<i>school</i>	before	bɪ:fɪ	2
<i>school</i>	bumped	bʌmpɪt	2
<i>school</i>	gave	geɪv	2
<i>school</i>	people	pi:pl	2
<i>school</i>	replied	ri:plɪ:t	2
<i>school</i>	smaller	smɑ:lɪ	2
<i>school</i>	smaller	smɔ:lɪ	2
<i>school</i>	smaller	smʌlɪ	2
<i>school</i>	that	ðæt	2
<i>school</i>	trembled	tremblɪ:t	2
<i>school</i>	trembled	trʌmpɪt	2

Table 14 - text 2

<i>group</i>	<i>word</i>	<i>pronunciation</i>	<i>no. of occurrences</i>
<i>kindergarten</i>	also	ʌlsɔ	8
<i>kindergarten</i>	find	fɪnd	6
<i>kindergarten</i>	breast	bri:st	5
<i>kindergarten</i>	danger	dʌŋgr	5
<i>kindergarten</i>	a	a	4
<i>kindergarten</i>	other	ɔðr	4
<i>kindergarten</i>	also	elsɔ	3
<i>kindergarten</i>	pale	pɑ:l	3
<i>kindergarten</i>	all	ɑ:l	2
<i>kindergarten</i>	bright	brikt	2
<i>kindergarten</i>	danger	dʌndʒr	2
<i>kindergarten</i>	even	e:vŋ	2
<i>kindergarten</i>	land	lʌnt	2
<i>kindergarten</i>	pale	pɔ:l	2
<i>kindergarten</i>	sometimes	sʌmtɪms	2
<i>kindergarten</i>	to	tɔ	2
<i>school</i>	find	fɪnd	5
<i>school</i>	danger	dɛŋgr	4
<i>school</i>	also	elsɔ	3
<i>school</i>	also	ʌlsɔ	3
<i>school</i>	also	ʌlsɔ:	3
<i>school</i>	are	e:r	3
<i>school</i>	bank	bʌŋk	3
<i>school</i>	breast	bri:st	3
<i>school</i>	danger	dʌndʒr	3
<i>school</i>	all	ɑ:l	2
<i>school</i>	all	el	2
<i>school</i>	danger	dʌŋgr	2
<i>school</i>	even	evŋ	2
<i>school</i>	land	lʌnt	2
<i>school</i>	to	tɔ	2
<i>school</i>	when	vi:n	2

Table 15 - text 3, kindergarten group

<i>group</i>	<i>word</i>	<i>pronunciation</i>	<i>no. of occurrences</i>
<i>kindergarten</i>	burglar	bʊglɑr	8
<i>kindergarten</i>	key	kej	3
<i>kindergarten</i>	began	begen	2
<i>kindergarten</i>	burglar	bu:glr	2
<i>kindergarten</i>	bushes	bʌʃɪz	2
<i>kindergarten</i>	drawer	drʌvr	2
<i>kindergarten</i>	gazed	geɪzɪt	2
<i>kindergarten</i>	into	ɪntə	2
<i>kindergarten</i>	loudly	laʊdli	2
<i>kindergarten</i>	once	ɔnts	2
<i>kindergarten</i>	put	pʌt	2
<i>kindergarten</i>	slipped	slɪ:pɪt	2
<i>kindergarten</i>	startled	stɑ:rlet	2
<i>kindergarten</i>	unfortunately	ʊnfɔrtʊneɪtli	2

Table 16 - text 4

<i>group</i>	<i>word</i>	<i>pronunciation</i>	<i>no. of occurrences</i>
<i>kindergarten</i>	hidden	hɪdən	1
<i>kindergarten</i>	although	dɪfrʊ	1
<i>kindergarten</i>	threatened	fri:ʌtnet	1
<i>school</i>	called	kɑ:let	1
<i>school</i>	range	rɪndʒ	1
<i>school</i>	centimeters	sentimetrz	1
<i>school</i>	distinctive	dɪskɪnɪf	1
<i>school</i>	flattened	flejtɪnet	1
<i>school</i>	climbers	klɪmbrs	1
<i>school</i>	birds	bɪrds	1
<i>school</i>	being	beɪŋk	1
<i>school</i>	excavate	ekstsʌvɪt	1
<i>school</i>	although	ʌlfrʊ	1
<i>school</i>	appearance	epɛrɛnts	1
<i>school</i>	hissing	hɪzɪŋ	1
<i>school</i>	threatened	tri:tenet	1

Table 17 - text 5

<i>group</i>	<i>word</i>	<i>pronunciation</i>	<i>no. of occurrences</i>
<i>kindergarten</i>	allowing	eləvɪŋk	1
<i>kindergarten</i>	caught	kɑdʒt	1
<i>kindergarten</i>	grabbed	greɪbɪt	1
<i>kindergarten</i>	hunched	hʌdʒd	1
<i>kindergarten</i>	instinctively	ɪnstɪsɪvtlɪ	1
<i>kindergarten</i>	lunged	lʌndʒt	1
<i>kindergarten</i>	onto	ɔntə	1
<i>kindergarten</i>	premature	preməʃr	1
<i>kindergarten</i>	slouched	slʌʃɪd	1
<i>kindergarten</i>	startled	strɪtlɪ	1
<i>kindergarten</i>	wanted	vɔntet	1
<i>kindergarten</i>	with	vɪv	1
<i>school</i>	allowing	eləʊvɪŋg	1
<i>school</i>	aunts	ɑ:ɒnts	1
<i>school</i>	bearers	bɪ:ers	1
<i>school</i>	flicked	fliket	1
<i>school</i>	giggling	dʒaɪglɪŋg	1
<i>school</i>	grabbed	greɪvɪt	1
<i>school</i>	grandparents	grʌndpərents	1
<i>school</i>	grinned	grɑ:jnet	1
<i>school</i>	hunched	hʌntʃet	1
<i>school</i>	instinctively	ɪnstɪvelɪ	1
<i>school</i>	knife	knɑɪf	1
<i>school</i>	lunged	lʌndʒet	1
<i>school</i>	premature	premtər	1
<i>school</i>	proclaimed	prəʊsleɪmet	1
<i>school</i>	pursuit	pɜ:ʃɪt	1
<i>school</i>	realised	reɪlɪ:sɪt	1
<i>school</i>	realised	rɪʒəlɪset	1
<i>school</i>	sausages	sɑ:sɪdʒs	1
<i>school</i>	sausages	sɔ:sɪdʒs	1
<i>school</i>	sight	sɑɪnt	1
<i>school</i>	slouched	sləʊtʃet	1
<i>school</i>	spilled	spɑɪlt	1
<i>school</i>	threw	trəʊ	1
<i>school</i>	used	u:st	1

Table 18 - text 6, kindergarten group

<i>group</i>	<i>word</i>	<i>pronunciation</i>	<i>no. of occurrences</i>
<i>kindergarten</i>	pirates	preɪt	1
<i>kindergarten</i>	characterised	tʃerəktraɪzd	1
<i>kindergarten</i>	reality	realɪtɪ	1
<i>kindergarten</i>	european	juːrɒpə	1
<i>kindergarten</i>	pirates	preɪt	1
<i>kindergarten</i>	century	ʃentɪ	1
<i>kindergarten</i>	pirates	pɪreɪts	2
<i>kindergarten</i>	corsairs	kɔːsɪəz	1
<i>kindergarten</i>	mediterranean	medɪtʃriːn	1
<i>kindergarten</i>	pirates	pɪreɪts	2
<i>kindergarten</i>	considered	kɒnsɪdərən	1
<i>kindergarten</i>	disguise	dɪsgaɪz	1
<i>kindergarten</i>	viciously	vɪkʃəs	1
<i>kindergarten</i>	crew	kruː	1
<i>kindergarten</i>	disgusted	dɪsgʊst	1
<i>kindergarten</i>	condemned	kɒndemnt	1
<i>kindergarten</i>	received	resveɪd	1

4.3.2 Substitutions

With substitutions, the problem in the reading can be described as an issue with the lexical route: Participants substituted a word for another. All the substitutions can be seen in the tables below (Tables 19-26).

Table 19 - beginners text

<i>group</i>	<i>right word</i>	<i>substitution</i>	<i>no. of occurrences</i>
<i>kindergarten</i>	hall	hell	2
<i>kindergarten</i>	her	here	9
<i>kindergarten</i>	hot	god	1
<i>kindergarten</i>	hot	good	1
<i>kindergarten</i>	into	eat	1
<i>kindergarten</i>	she	see	1
<i>school</i>	on	in	1
<i>school</i>	her	here	19
<i>school</i>	hot	got	1
<i>school</i>	went	hint	1
<i>school</i>	she	see	1
<i>school</i>	into	in	1
<i>school</i>	had	hot	1
<i>school</i>	her	hers	1
<i>school</i>	here	he	1

Table 20 - text 1, kindergarten group

<i>group</i>	<i>right word</i>	<i>substitution</i>	<i>no. of occurrences</i>
<i>kindergarten</i>	asked	scared	1
<i>kindergarten</i>	became	dream- cream	1
<i>kindergarten</i>	far	four/for	2
<i>kindergarten</i>	far	fair	2
<i>kindergarten</i>	had	hand	3
<i>kindergarten</i>	it's	this	1
<i>kindergarten</i>	of	for	1
<i>kindergarten</i>	she	see	2
<i>kindergarten</i>	shut	shit	1
<i>kindergarten</i>	that	the	2
<i>kindergarten</i>	the	them	1
<i>kindergarten</i>	then	the	2

Table 21 - text 1, school group

<i>group</i>	<i>right word</i>	<i>substitution</i>	<i>no. of occurrences</i>
<i>school</i>	far	fair	1
<i>school</i>	became	become	3
<i>school</i>	and	the	1
<i>school</i>	cars	cats	1
<i>school</i>	became	bacon	1
<i>school</i>	far	war	1
<i>school</i>	far	from	2
<i>school</i>	a	and	1
<i>school</i>	belt	bell	1
<i>school</i>	a	the	1
<i>school</i>	belt	believe	1
<i>school</i>	flown	floor	1
<i>school</i>	flown	fall	1
<i>school</i>	flown	flow	1
<i>school</i>	for	four/for	5
<i>school</i>	gave	give	2
<i>school</i>	had	has	1
<i>school</i>	he	she	1
<i>school</i>	hug	jug	1
<i>school</i>	just	juice	1
<i>school</i>	never	ever	1
<i>school</i>	out	your	1
<i>school</i>	people	pineapple	1
<i>school</i>	replied	repeat	1
<i>school</i>	she	he	1
<i>school</i>	shut	shit	1
<i>school</i>	shut	sound	1
<i>school</i>	smaller	smells	1
<i>school</i>	suddenly	study	1
<i>school</i>	that	the	7
<i>school</i>	then	the	2
<i>school</i>	then	ten	1
<i>school</i>	was	has	1
<i>school</i>	what	but	1

Table 22 - text 2, kindergarten group

<i>group</i>	<i>right word</i>	<i>substitution</i>	<i>no. of occurrences</i>
<i>kindergarten</i>	an	and	1
<i>kindergarten</i>	insects	incest	1
<i>kindergarten</i>	nests	nasals	1
<i>kindergarten</i>	other	order	1
<i>kindergarten</i>	pots	post	3
<i>kindergarten</i>	spots	sports	2
<i>kindergarten</i>	stump	stamp	2
<i>kindergarten</i>	with	which	3
<i>school</i>	an	and	1
<i>school</i>	berries	barriers	1
<i>school</i>	breast	bread	1
<i>school</i>	breast	bright	1
<i>school</i>	bright	bridge	2
<i>school</i>	bright	brink	1
<i>school</i>	bright	Bridget	1
<i>school</i>	bright	bird	1
<i>school</i>	bright	brick	1
<i>school</i>	cats	cramps	1
<i>school</i>	even	event	1
<i>school</i>	fight	think	1
<i>school</i>	food	good	1
<i>school</i>	in	and	1
<i>school</i>	insects	insides	1
<i>school</i>	nest	next	1
<i>school</i>	other	otter	1
<i>school</i>	other	odour	1
<i>school</i>	pale	plate	1
<i>school</i>	pale	play	1
<i>school</i>	pockets	packets	1
<i>school</i>	pots	post	1
<i>school</i>	pots	port	1
<i>school</i>	scraps	scrubs	1
<i>school</i>	scraps	carpets	1
<i>school</i>	seeds	sets	1

Table 23 - text 3, kindergarten group

<i>group</i>	<i>right word</i>	<i>substitution</i>	<i>no. of occurrences</i>
<i>kindergarten</i>	came	come	1
<i>kindergarten</i>	could	called	1
<i>kindergarten</i>	through	throw	1
<i>kindergarten</i>	heard	heart	1

Table 24 - text 4

<i>group</i>	<i>right word</i>	<i>substitution</i>	<i>no. of occurrences</i>
<i>kindergarten</i>	claws	close	1
<i>school</i>	whole	vowel	1
<i>school</i>	ten	the	1

Table 25 - text 5

<i>group</i>	<i>right word</i>	<i>substitution</i>	<i>no. of occurrences</i>
<i>kindergarten</i>	when	then	1
<i>kindergarten</i>	haired	hater	1
<i>kindergarten</i>	flee	feel	1
<i>school</i>	slid	slide	1
<i>school</i>	caught	called	1

Table 26 - text 6, kindergarten group

<i>group</i>	<i>right word</i>	<i>substitution</i>	<i>no. of occurrences</i>
<i>kindergarten</i>	expanded	expat	1
<i>kindergarten</i>	continents	countries	1
<i>kindergarten</i>	Blackbeard	blackbird	1
<i>kindergarten</i>	women	woman	2
<i>kindergarten</i>	that	than	1
<i>kindergarten</i>	picking	picknicks	1

4.3.3 Other mistakes

Other types of mistakes were not as common as substitutions and mispronunciations, so I did not include them in the quantitative analysis. They did however occur in some instances, so I am including them in the qualitative analysis. Those types of mistakes were omissions, where the participants omitted a part of the word, refusals, where the participants refused to read the word altogether and additions, where the participants either added a part of the word, or added a whole word in a place where there was none. All those mistakes can be seen in the tables below (Tables 27-35).

Table 27 - refusals, beginners text

<i>group</i>	<i>word</i>	<i>no. of occurrences</i>
<i>kindergarten</i>	Anna	2
<i>kindergarten</i>	hot	1
<i>school</i>	went	2
<i>school</i>	tea	1

Table 28 - omissions, text 1, kindergarten group

<i>group</i>	<i>word</i>	<i>no. of occurrences</i>
<i>kindergarten</i>	look(ed)	1

Table 29 - refusals, text 1, kindergarten group

<i>group</i>	<i>word</i>	<i>no. of occurrences</i>
<i>kindergarten</i>	a	1
<i>kindergarten</i>	that	3
<i>kindergarten</i>	far	1
<i>kindergarten</i>	had	1
<i>kindergarten</i>	clicked	1
<i>kindergarten</i>	seat	1
<i>kindergarten</i>	them	1
<i>kindergarten</i>	became	1
<i>kindergarten</i>	suddenly	1
<i>kindergarten</i>	bumped	1
<i>kindergarten</i>	asked	1
<i>school</i>	of	1
<i>school</i>	a	2
<i>school</i>	seat	1
<i>school</i>	then	1

Table 30 - omissions, text 2

<i>group</i>	<i>word</i>	<i>no. of occurrences</i>
<i>kindergarten</i>	park(s)	1
<i>kindergarten</i>	Robin(s)	1
<i>kindergarten</i>	seed(s)	1
<i>kindergarten</i>	cat(s)	1
<i>school</i>	wood(s)	1
<i>school</i>	pocket(s)	2
<i>school</i>	nest(s)	1
<i>school</i>	cat(s)	1
<i>school</i>	Robin(s)	5
<i>school</i>	park(s)	3

Table 31 - refusals, text 2

<i>group</i>	<i>word</i>	<i>no. of occurrences</i>
<i>kindergarten</i>	it	2
<i>kindergarten</i>	of	1
<i>school</i>	a	3
<i>school</i>	it	1

Table 32 - additions, text 2

<i>group</i>	<i>word</i>	<i>no. of occurrences</i>
<i>kindergarten</i>	the	1
<i>kindergarten</i>	make-s	1
<i>kindergarten</i>	stump-s	1
<i>kindergarten</i>	like-s	1
<i>kindergarten</i>	make-s	1
<i>school</i>	their-s	2
<i>school</i>	the	1
<i>school</i>	stump-s	1
<i>school</i>	year-s	3

Table 33 - omissions, text 4, school group

<i>group</i>	<i>word</i>	<i>no. of occurrences</i>
<i>school</i>	know(n)	1

Table 34 - refusals, text 5, kindergarten group

<i>group</i>	<i>word</i>	<i>no. of occurrences</i>
<i>kindergarten</i>	a	1
<i>kindergarten</i>	is	1

Table 35 - omissions, text 6, kindergarten group

<i>group</i>	<i>word</i>	<i>no. of occurrences</i>
<i>kindergarten</i>	trade(d)	1

4.4 Common mistakes

It is obvious in the count of the mistakes in the tables above, that some mistakes were more common than others. That is why I decided to create a table with the most common mistakes that could be found in the analysis. It could be said that the mistakes that only occurred one or two times were just an error of the particular participant, but it is a question worth exploring why some of the mistakes occurred more than twice. In this particular table, I looked at the total number of mistakes, regardless of the two groups. The table of the most common mistakes can be found below (Table 36).

Table 36 - the most common mistakes

<i>text</i>	<i>type of mistake</i>	<i>word</i>	<i>wrong pronunciation</i>	<i>total number of mistakes</i>
<i>l</i>	mispronunciation	was	vΛz	35
<i>beg</i>	substitution	her	here	28
<i>l</i>	mispronunciation	was	vez	25
<i>l</i>	mispronunciation	clicked	klɪket	19
<i>l</i>	mispronunciation	hug	høk	15
<i>l</i>	mispronunciation	cloud	klou̯t	14
<i>l</i>	mispronunciation	asked	Λsket	13
<i>l</i>	mispronunciation	looked	løket	13
<i>beg</i>	mispronunciation	into	ɪntə	12
<i>l</i>	mispronunciation	smaller	smΛlr	12
<i>l</i>	mispronunciation	a	a	11
<i>l</i>	mispronunciation	replied	repli:t	11
<i>l</i>	mispronunciation	smaller	smΛlør	11
<i>2</i>	mispronunciation	also	Λlsə	11
<i>2</i>	mispronunciation	find	find	11
<i>l</i>	mispronunciation	suddenly	sødenlɪ	10
<i>l</i>	mispronunciation	trembled	tremble̯t	9
<i>l</i>	substitution	that	the	9
<i>beg</i>	mispronunciation	to	tə	8
<i>l</i>	mispronunciation	bumped	bømpet	8
<i>l</i>	mispronunciation	shut	ʃət	8
<i>2</i>	substitution	with	which	8
<i>2</i>	mispronunciation	breast	bri:st	8
<i>3</i>	mispronunciation	burglar	bøglər	8
<i>l</i>	mispronunciation	out	əʊt	7
<i>l</i>	mispronunciation	what	vΛt	7
<i>beg</i>	mispronunciation	a	[a]	6
<i>beg</i>	mispronunciation	anna	ejn	6
<i>2</i>	omission	Robins	Robin(s)	6
<i>2</i>	mispronunciation	also	elsə	6
<i>l</i>	mispronunciation	before	befør	5
<i>l</i>	mispronunciation	bumped	bømpet	5
<i>l</i>	mispronunciation	gave	gef	5
<i>l</i>	mispronunciation	he	he	5
<i>l</i>	mispronunciation	just	jøst	5
<i>l</i>	mispronunciation	looked	løket	5
<i>l</i>	mispronunciation	trembled	trembli:t	5
<i>l</i>	substitution	for	four/for	5
<i>2</i>	mispronunciation	a	a	5
<i>2</i>	mispronunciation	danger	dΛngr	5
<i>2</i>	mispronunciation	danger	dengr	5
<i>2</i>	mispronunciation	danger	dΛndʒr	5
<i>beg</i>	mispronunciation	hall	hΛl	4
<i>beg</i>	mispronunciation	outfit	outfit	4

1	mispronunciation	asked	esket	4
1	mispronunciation	bumped	bʌmpɪt	4
1	mispronunciation	bumped	bʊmbɪ:d	4
1	mispronunciation	he	he:	4
1	mispronunciation	Jack	jʌtsk	4
1	mispronunciation	looked	lʊkɪt	4
1	mispronunciation	smaller	smʌlər	4
1	mispronunciation	that	θʌt	4
1	mispronunciation	was	vɪz	4
2	substitution	pots	post	4
2	mispronunciation	all	ɑ:l	4
2	mispronunciation	land	lʌnt	4
2	mispronunciation	other	ɔ:ðr	4
2	mispronunciation	to	tʊ	4
beg	mispronunciation	had	hʌt	3
beg	mispronunciation	outfit	ɑ:tfɪt	3
1	refusal	that	x	3
1	mispronunciation	became	bekʌm	3
1	mispronunciation	before	befr	3
1	mispronunciation	flown	flʊvn	3
1	mispronunciation	just	jʊst	3
1	mispronunciation	looked	lʊket	3
1	mispronunciation	mum	mʊm	3
1	mispronunciation	never	never	3
1	mispronunciation	replied	repleɪt	3
1	mispronunciation	replied	replɪjet	3
1	mispronunciation	smaller	smɑ:lɪr	3
1	substitution	became	become	3
1	substitution	far	fair	3
1	substitution	had	hand	3
2	refusal	it	x	3
2	omission	cats	cat(s)	3
2	omission	parks	park(s)	3
2	addition	year	year-s	3
2	substitution	spots	sport	3
2	mispronunciation	also	ʌlsə:	3
2	mispronunciation	are	e:r	3
2	mispronunciation	bank	bʌnk	3
2	mispronunciation	bright	brikt	3
2	mispronunciation	even	evn	3
2	mispronunciation	pale	pɑ:l	3
2	mispronunciation	when	vi:n	3
3	mispronunciation	key	kej	3

4.5 Accuracy, rate, and comprehension

The YARC methodology is designed to record accuracy, rate, and comprehension for each of the participants. These measures can primarily help determine the level of reading of each participant, but it can also help determine the differences between the two groups. After counting the number of mistakes in the two texts that the participant read, ability score, standard score, percentile rank and an age equivalent (related to average native children) can all be obtained based on information and tables contained in the YARC manual.

In the table on the record form, the examiner is supposed to write the number of mistakes the child made in the two texts. Based on this number, ability scores can be found in some tables in the manual. The ability score is based on the two texts the participant read – so the examiner finds tables attributed to those two texts in the manual and finds a row with the number of mistakes for the participant. The next column shows the ability score of the participant. Then an average ability score is calculated, which is then rounded to the nearest whole number. This average ability score is recorded in the form.

With ability score in mind, standard score can be calculated with a different table in the manual. The table contains the different ability scores and also different ages of the presumed participants. A certain ability score may indicate a great result in a young child, but a poor result in an older child. This table allows to combine the ability score with the age of the child. The examiner then takes the ability score and the age of the participant and wherever these two datapoints cross in the table, that is the standard score for the participant.

For ability scores and standard scores, there are separate tables for accuracy, rate and comprehension. To calculate the percentile rank from the standard score, there is one conversion table for all three categories. The examiner takes the participants standard score and in the next column in the table, there is the percentile rank for this score. The table also offers a description of this percentile – percentiles ranging from 2 to 8 are described as the participant having severe difficulty with the task; percentiles ranging from 9 to 14 are described as below average; percentiles ranging from 16 to 84 are described as average; percentiles ranging from 86 to 91 are described as above average and lastly, percentiles ranging from 92 to 98 and more are described as excellent. Percentiles assess how the child tested compares to the (monolingual) population: if a child scored in the 20th percentile, for example, it means that given a random sample of a hundred children in the United Kingdom, 19 will perform more poorly than the tested child, and 80 will perform better. These tables are calculated assessing a large number of children across the country, during the standardisation of the task.

The last thing that can be calculated from those tables in the manual is the age equivalent of the participant. There are three separate tables – one for accuracy, one for rate and one for comprehension. The tables have two columns – one with the ability score and one with the age equivalent. So, the examiner simply takes the age equivalent attributed to the ability score and records it into the form.

When I had calculated all of the numbers for all of the participants, I created a table including all of them and then I counted the percentile means and standard deviations and also the age mean and standard deviations for each of the three categories and both the school group and the kindergarten group (note: school group refers to late sequentials, being exposed to English from primary school; kindergarten group refers to early sequentials, being exposed to English from Kindergarten). I did ask the participants the comprehension questions, but since reading comprehension is not a vital part of pronunciation of single words, I decided not to include the results in this thesis.

4.5.1. Accuracy

Accuracy numbers were assessed by computing the number of reading errors. Then, the ability scores were calculated as was described above. From that I calculated the percentiles and used them for the analysis (Table 37 and 28).

Table 37 - kindergarten accuracy

<i>participant</i>	<i>age</i>	<i>accuracy percentile</i>
1	9	9
7	10	7
9	8	5
11	10	2
12	11	2
14	11	4
15	12	5
17	11	3
18	11	1
19	9	5
20	9	2
21	9	2
22	11	3
23	11	4
27	11	21
31	8	5
35	8	4
37	9	1
38	12	1
42	11	1

Table 38 - school accuracy

<i>participant</i>	<i>age</i>	<i>accuracy percentile</i>
2	9	1
3	10	1
4	9	1
8	9	2
13	11	61
16	9	13
24	11	1
25	11	3
26	11	1
28	10	4
29	8	4
30	10	1
32	8	4
33	8	1
34	8	13
36	8	4
39	12	1
40	11	1
41	11	5
43	11	3

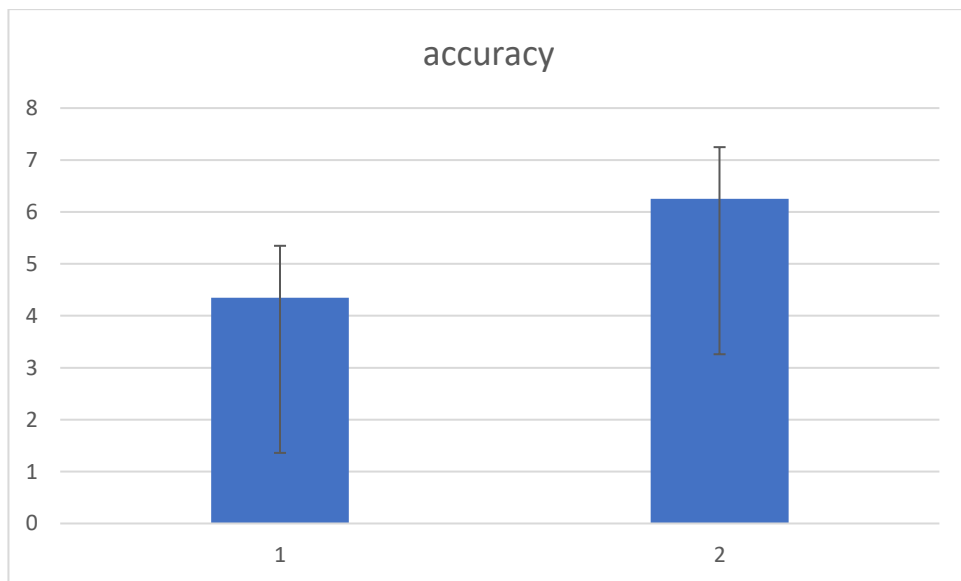
In order to compare the two tables, I performed a t-test with the percentiles. Results are reported in the table below (Table 39), and represented visually in the following graph (Graph 5).

Table 39 - accuracy t-test

t-Test: Two-Sample Assuming Equal Variances

	Variable 1 (kindergarten)	Variable 2 (school)
Mean	4,35	6,25
Variance	19,924	178,829
Observations	20	20
Hypothesized Mean Difference	0	
df	38	
t Stat	-0,603	
P(T<=t) two-tail	0,551	
t Critical two-tail	2,025	

Graph 6 - accuracy



The table and the graph show that the means for the kindergarten group are lower than those of the school group. As was explained above, the higher the percentile, the better the participants performed. In this case, then, it might appear that the school group performed better. However, the p-value is higher than 0,05, so the null hypothesis cannot be rejected, meaning that the difference between the two groups is not significant.

4.5.2. Rate

Calculating the rate scores was tougher to some extent. To calculate the ability scores, the first step that needed to be taken was to measure the time in seconds – I did that when listening to the recordings, my media player helped me to be precise with the exact timings. Every text had a total number of words counted and the information was presented on the record form. Then the manual offered a formula to convert those numbers into a time category.

Formula 1 - converting rate

$$\frac{\text{number of words in passage}}{\text{time taken in secons}} \times 5$$

The final number gets rounded to the nearest whole number and gets recorded into the record form. On the next page of the manual, tables for converting the time category into ability scores can be found. From this point, similar tables as for reading accuracy are used to get the standard scores, percentile ranks and age equivalents. Using the percentiles again, I did the analysis (Table 40).

Table 40 - kindergarten rate

<i>participant</i>	<i>age</i>	<i>rate percentile</i>
1	9	40
7	10	13
9	8	1
11	10	8
12	11	10
14	11	7
15	12	13
17	11	4
18	11	3
19	9	19
20	9	18
21	9	16
22	11	5
23	11	12
27	11	23
31	8	12
35	8	13
37	9	10
38	12	5
42	11	4

Table 41 - school rate

<i>participant</i>	<i>age</i>	<i>rate percentile</i>
2	9	16
3	10	6
4	9	8
8	9	13
13	11	1
16	9	9
24	11	12
25	11	19
26	11	1
28	10	6
29	8	13
30	10	4
32	8	13
33	8	1
34	8	42
36	8	1
39	12	3
40	11	7
41	11	37
43	11	7

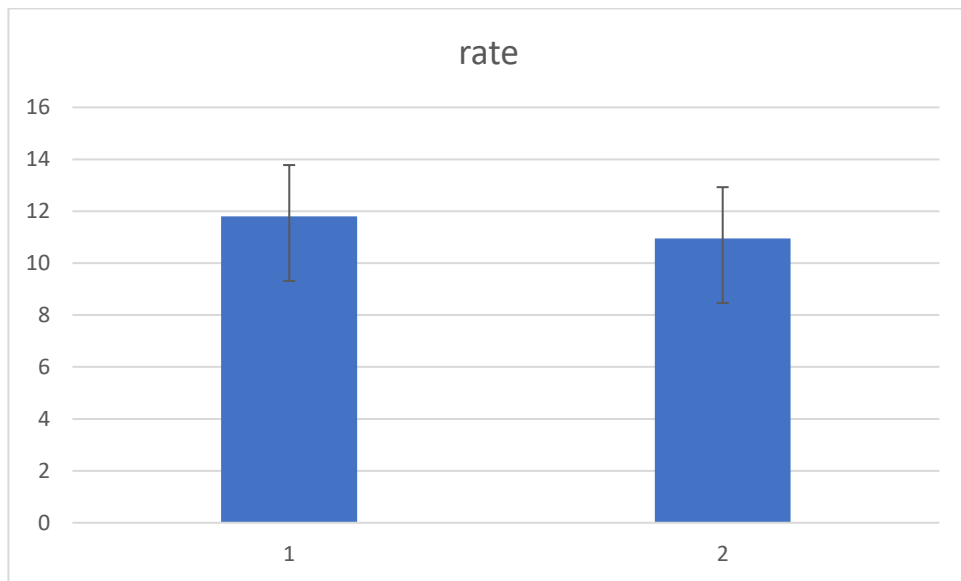
Performance in the two groups was compared using a t-test. Results are reported in the table below (Table 42), and presented visually in the following graph (Graph 6):

Table 42 - rate t-test

t-Test: Two-Sample Assuming Equal Variances

	<i>Variable 1 (kindergarten)</i>	<i>Variable 2 (school)</i>
<i>Mean</i>	11,8	10,95
<i>Variance</i>	78,168	123,524
<i>Observations</i>	20	20
<i>Hypothesized Mean Difference</i>	0	
<i>df</i>	38	
<i>t Stat</i>	0,268	
<i>P(T<=t) two-tail</i>	0,791	
<i>t Critical two-tail</i>	2,025	

Graph 7 - rate



In this case, looking at the means suggest that the kindergarten group performed better; however, taking the p-value into account, the results are yet again not significant, so the hypothesis is not rejected (there is no significant difference between the two groups).

5. Discussion

The aim of this research was to assess whether there is a significant impact of the age of onset on pronunciation of English in Czech speakers. The hypothesis was developed based on similar psycholinguistic research. In previous work, results showed that with sufficient input, age of onset does in fact matter, and so the sooner a person starts speaking a language, the better they will be at it in general (and thus also at pronouncing it). Hence, the hypothesis was simple – out of the two groups, early sequential bilinguals and late sequential bilinguals, the former would be significantly better at pronouncing English words than the latter.

On first impression, there were major differences in the pronunciation between children: Some of the kids did not pronounce almost any word correctly, while others read even the more advanced texts without hesitation and with minimal mistakes. But the main question is, how did each group perform as a whole?

The first test I carried out was an Anova (page 31) where I tried to figure out whether there was a significant difference between the two most common mistakes – substitutions and pronunciations – and also whether this pattern was different in the two groups. I found a significant effect of type (mispronunciations are more common than substitutions), and no significant effect of group (which means that both groups performed similarly overall). This first result goes against my hypothesis. A tendency in the interaction ($p = .1$) made however suspect that there were indeed some subtle differences between the two groups, so I ran a number of post-hoc tests.

First, I used two t-tests, one for each of the individual type of mistakes. The first one mentioned in this thesis is the one concerning substitutions. The t-test and the graph attached showed that the kindergarten group made on average less mistakes than the school group – the mean of the mistakes for the kindergarten group equals 3,2 mistakes and for the school group it equals 6,1 mistakes. With a p-value of 0,0071, the null hypothesis can be rejected and it can be concluded that the results are significant. This finding is consistent with my research hypothesis: in this particular case, the age of onset did matter.

The second t-test concerned the mispronunciations. On average, the kindergarten group made more mistakes than the school group – the mean of the mistakes for the kindergarten group equals 23,95 and for the school group it equals 22,9. In this case, however, with a p-

value of 0,6829, the null hypothesis cannot be rejected and the results are deemed not significant.

The next two tests were not directly connected to the main hypothesis, but they were however important to make sense of the most commonly made mistakes. I did two t-test to determine the differences between the two most common types of mistakes – substitutions and mispronunciations. As was mentioned previously, those two were not the only types of mistakes, the methodology I used was working with four more types: Omissions, additions, refusals and reversals. Interestingly enough, reversals never appeared all through this whole research. Omissions, additions, and refusals were sometimes present in the reading, but they were so rare that it would be redundant to use them in the quantitative analysis. That is why I focused mainly on substitutions and mispronunciations. I did two t-tests again, this time to figure out if there as a significant difference in the number of substitutions and pronunciations in each of the participating groups.

For early sequential bilinguals, the number of substitutions was lower than the number of mispronunciations – the mean for the substitutions equals 3,2 and for mispronunciations, it equals 23,95. And considering the p-value of $4,736^{-14}$, the null hypothesis can be safely rejected and the results could be considered significant: The count of mispronunciations was significantly higher than the count of substitutions.

The same t-test was carried out with the numbers for the late sequential bilinguals. Even though the difference between the two numbers was not as large as with the early sequentials group, there was still a clear difference between the two – the mean for substitutions equals 6,1 and the mean for mispronunciations equals 22,9. The p-value in this case equals $9,551^{-10}$, which is also a highly significant result: In this case too, the null hypothesis can be rejected and the results are deemed significant.

The last two variables that were measured with the quantitative analysis were overall accuracy and rate. In both of these, percentiles were used for the analysis. Those percentiles were calculated according to the YARC methodology. The percentiles show how difficult the task was for participants in my study. As was mentioned in section 4.5, the values also have their own “lexical description”. After counting the means for each of the groups in each of the tasks, according to those descriptions included in the used methodology, the kindergarten group had a mean accuracy of 4,35, which would equal “severe difficulty” on the lexical description scale. The school group performed overall better, with a mean accuracy of 6,25, which would however still equal “severe difficulty” on the lexical

description scale. One of the most noticeable findings in these results is the major difference between the individual participants. While in the kindergarten group, the difference between the best performing and the worst performing participant was only 20 points and the rest of the points were more or less evenly distributed between 1 and 9 points, the school group showed much more huge differences. The difference between the best and the worst performing participant was a whole of 60 points, with the best performing participant scoring 61 points, but the next best two scoring 13. The rest was distributed between 5 and 1 points. The p-value for this test was 0,55, so the null hypothesis cannot be rejected, and the results are not significant either (groups were not significantly different in terms of overall accuracy).

Rate results were also compared with a t-test. Again, using the descriptions included in the manual, it can be said that the kindergarten group, that on average scored 11,8 points, is “below average” and the school group, that on average scored 10,95 points, is also “below average”. Here again, the groups showed the same results when it comes to the lexical descriptions, as in the accuracy part of the test. With rate, the differences between individual participants were not as severe as with the accuracy. In the kindergarten group, the point difference between the best and the worst performing participant was 39 with the majority of points ranging from 10 to 19, in the school group, the difference between the best and worst was 41 points, with the rest of the points ranging everywhere through 1 to 42. The p-value however was once again too big to reject the null hypothesis, and the results were not significant: overall there is no significant difference in reading rate between the two groups.

A big part of the analysis was taken up by the qualitative analysis, where I looked at the most common mistakes one by one. I wrote down every possible pronunciation in IPA for the mispronunciations and I compared the substituted words to the correct words. With omissions and additions, I simply wrote down what was omitted and added; when the participant refused to pronounce the word altogether, I just noted it down in the refusals table. Again, since the substitutions and mispronunciations were by far the most common mistakes, I focused mainly on those, but some of the other three types did appear in the 4.4 Common mistakes chapter.

The first group of mistakes I focused on was the mispronunciations. The tables included in the chapter 4.3.1 Mispronunciations are divided into the two participant groups, but they are also divided by the texts, since the same mistakes in the same words occurred in the

same texts. Table 11 and 12 are concerned with the beginners' text and it can be seen that the most common mistake (the word into, pronounced as /into/) was in the first place in both of the groups. The school group also had more mistakes that appeared more than once than the kindergarten group. Out of the 7 words that appear in the kindergarten group table, 5 appear also in the school group table. This would suggest that the kindergarten group performed slightly better than the school group, and also that the most commonly mispronounced words appeared in both of the groups. Interestingly though, the word "hall" was commonly mispronounced as /ha:l/ in the kindergarten group, but as /hʌl/ in the school group. With the word "outfit", the kindergarten group mainly mispronounced it as /ʊtfit/, and so did the school group, but the school group also mispronounced it as /ɔ:tfit/. Tables 13 and 14 were focused on text 1. This text included longer words but also more grammatical words than the beginners' text. Those two types of words were exactly the most commonly mispronounced. The table shows that one of the most difficult words was the word "was" which was commonly mispronounced as either /vʌz/, /vez/, or /vɪz/. The table also shows that with the longer words, the problem commonly appeared in the pronunciation of the ending. For example, the -ed ending was commonly pronounced as /-et/, /-it/ or /-i:t/. Both the /vʌz/ and /-et/ pronunciations could be explained by differences in English and Czech spelling. Czech text is read using the grapheme-phoneme route (Coltheart et al., 2001), so when participants were not sure of the pronunciation, they read the word the same way they would in Czech – grapheme to phoneme – assigning the graphemes their Czech equivalent sounds. A similar problem can be found in the tables 15 and 16, concerning text 2. One of the common appearing words here is the word "danger". While in some cases there is a problem in the pronunciation of the mid-vowel, often times the participants struggled with pronouncing the letter g. In this word, "g" would normally be pronounced as /dʒ/, but in 17 cases participants pronounced it as /g/, again, assigning to the phoneme the Czech sound. Other words in this were also often read using the grapheme-phoneme route, for example the most common words in every group: "also" (read as /ʌlso/) and "find" (read as /find/). No participant from the school group read text 3, but the most commonly mispronounced word from the kindergarten group in that text was the word "burglar". This could be caused by the fact that in vocabularies of 8-12 years old aged children this a fairly uncommon word. Similar mistakes as previously mentioned also occurred: whole words or at least parts of them were pronounced using the grapheme-phoneme route. Texts 4, 5 and 6 do not give us any data on most common mistakes, since all of the mistakes in those texts appeared only once or twice throughout the whole test.

In chapter 4.3.2 Substitutions, the tables were divided the same way as with mispronunciations. In the case of substitutions, the mistakes often occurred way less commonly than with mispronunciations – ergo only once or twice – but there were some mistakes that stood out. Tables 23 and 24 focus on the beginners’ text. The very noticeable mistake was in the word “her”, that was substituted for the word “here” not only 9 times in the kindergarten group, but also 19 times in the school group. In text 1, the most common mistake for the kindergarten group was substituting the word “had” with the word “hand” 3 times, and in the school group, it was the word “that” substituted for the word “the” 7 times. In text 2, the most common mistake was substituting the word “with” for the word “which”, occurring 5 times in the school group and 3 times in the kindergarten group. From text 3 up to text 6, all the substitutions only occurred once or twice in total.

While with mispronunciations the problem can be described as an issue with the grapheme-phoneme route of reading, with substitutions, since the whole word was substituted for another, one may argue that there is an issue with the lexical route to of reading (Coltheart et al., 2001). As was mentioned above, mispronunciations appeared significantly more in both the kindergarten and the school group, which could lead to the conclusion that Czech speakers make more mistakes when trying to read the words using the grapheme-phoneme route than when they try to read the words lexically.

From all the t-tests concerning the differences between the two groups, only one showed a significant result: The test that was concerned with the total count of substitutions in each of the groups. The result showed that the kindergarten group was performing significantly better than the school group, which is consistent with the main hypothesis that the age of onset does matter and that the earlier a speaker is exposed to a language, the better they will pronounce it. The other three t-tests however were not consistent with the hypothesis. The t-test concerning the difference in the two groups in mispronunciations, the one concerning accuracy percentiles, and the one concerning rate did not show significant results.

This unexpected finding could be caused by many different factors, and it could be explained in one of the following ways:

First, there is a possibility that the difference in age of onset between early and late sequential bilinguals is too small to make a difference in pronunciation and rate. The window in which a speaker is more prone to learn in a certain way could be as big as to contain both ages of onset – kindergartners and school aged children.

Second, there could also be a problem in the quality of the input. In the thematic report from the Czech School Inspection from the year 2009 it can be found that, from all the teachers that teach English in primary schools, 12,9% are fully qualified to teach English in primary schools, 24,7% are fully qualified to teach English in general, 33,9% have other university qualifications, 2,2% are native speakers, 10,1% did finish studying at a university but are not qualified and 16,2% are not qualified and did not finish university (the full table can be found in the appendix).

Since many schools offer English classes from the first year, even though it is legally mandatory to do so in the third year, it may be the case that there is a lack of qualified teachers, at least in the earlier grades. One may argue that it would be better to nationally unify the year in which children start learning English, so that the certified and qualified teachers would not be as dispersed as they are right now.

6. Conclusion

This study focused on the influence of age of onset on the pronunciation in Czech children learning English. Since the age of when to start learning English in the Czech Republic is not unified (the oldest children legally have to be to start learning English is in the third grade, but there are many opportunities to start earlier, some schools even start teaching English in the first year obligatorily, and many children start in kindergarten), this thesis aimed to figure out whether differences in age of onset to English made any difference in the pronunciation of words.

The theory behind this research was explored in the second chapter of this thesis and was based on many scientific studies regarding bilingual children, since L2 learning during childhood can be seen as a form of bilingualism; researches similar to this one were used to form the hypothesis (though none of those researches was conducted on Czech-English bilinguals).

The research deployed the York Assessment of Reading for Comprehension as a methodology and slightly altered it to fit the research with bilingual children. Forty children aged 8 to 12 years were subjected to the testing.

The results revealed that it is far more common for Czech children to try and read an unknown English word as they would read a Czech one, i.e. using the grapheme-phoneme route. They also revealed that we do not find a significant difference in pronunciation between early and late sequential bilinguals. This could be caused by two factors: either the age of onset between those two groups is not large enough to have a weight cognitively, or there is a problem in the quality of the input for Czech speakers of English due to a lack of qualified English teachers in the country. Nonetheless, the study showed that one feature was indeed affected by age of onset: children with an earlier age of onset produced a significantly smaller number of substitutions than children with a later age of onset.

7. References

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8. Resumé

Tato práce se zabývá vývojem fonologie angličtiny u českých dětí a především otázkou, zda má věk, ve kterém se dítě začne učit cizí jazyk, vliv na pozdější výslovnost. Toto téma bylo zvoleno na základě skutečnosti, že český školský systém není jednotný v otázce věku, kdy začít vyučovat cizí jazyk. Nejpozdější termín, kdy se žáci v českých školách začínají učit angličtinu, je třetí ročník základní školy, avšak mnoho škol nabízí výuku cizího jazyka již od ročníku prvního, a nejen to – výuku cizích jazyků nabízejí i leckteré školky. Proto by se dalo předpokládat, že věkově rozdílný začátek výuky bude mít vliv na pozdější zdatnost dětí v daném jazyce.

Výzkum je zaměřen na vývoj fonologie, podle úlohy k přečtení bylo hodnoceno, jak žáci na různých úrovních vyslovují a zda má na výslovnost vliv věk, ve kterém se žáci začali učit anglický jazyk. V posledních letech se výzkum na toto téma v oblasti bilingvismu rozvinul, avšak ještě není rozhodně do detailů prozkoumán, a nelze tedy stále jednoznačně říct, zda je osvojení cizího jazyka snazší pro mladší studenty než pro dospělé.

V teoretické části se práce zabývá jazykovou akvizicí a fonologií. V části jazykové akvizice je nejprve popsáno, jak dochází k osvojování prvního jazyka, tato část se opírá především o učebnice M. T. Guastiové a Bena Ambridge & Eleny V. M Lievenové. Dále se práce věnuje problematice bilingvismu a akvizice cizího jazyka. Tato část se opírá o Společný evropský referenční rámec vytvořený univerzitou v Cambridge a řeší, co vlastně bilingvismus znamená. Definice bilingvismu je složitý proces, protože každý akademik definuje bilingvismus mírně odlišně. V minulosti převládala myšlenka, že aby člověk mohl být bilingvní, musí disponovat v obou jazycích stejnou slovní zásobu. To je samozřejmě nemožné, tudíž ale ani v dnešní době nelze bilingvismus definovat jednoznačně. Následující kapitola se zabývá teoretickým základem problému, kterému se tato práce věnuje, a zkoumá vliv věku, ve kterém se žák s jiným mateřským jazykem, než je čeština, začne učit anglicky. Poslední kapitola jazykové akvizice se zabývá způsobem, jakým je anglický jazyk vyučován na českých školách a opírá se o rámcový vzdělávací program pro základní vzdělávání vydaný pod záštitou MŠMT.

Poslední část teoretického úvodu je zaměřena na fonologii, rozebírá rozdíly mezi českými a anglickými fonémy a zejména rozdíly ve způsobu čtení českého a anglického jazyka – český jazyk se čte stylem grafém-foném, tedy každý grafém odpovídá jistému zvuku a slovo se čte jako sled těchto přiřazených zvuků. Ovšem v anglickém jazyce se nevyslovuje každý grafém ve slově, čte se tedy lexikálním způsobem – konkrétní sled grafémů se vysloví jako svůj konkrétní sled zvuků, který ovšem není na grafémech závislý tak jako v češtině.

Výzkumu v praktické části se účastnilo 40 dětí ve věku od osmi do dvanácti let z rokycanských škol. Těchto 40 účastníků bylo rozděleno na dvě skupiny po dvaceti – raně sekvenčně bilingvní a pozdně sekvenčně bilingvní. Test, který byl pro tuto práci použit, byl založen na „the York Assessment of Reading for Comprehension Passage Reading”, jehož autory jsou Margaret J. Snowlingová, Susan E. Stothardová, Paula Clarková, Claudine Bowyer-Craneová, Angela Harringtonová, Emma Truelovová, Katie Nationová a Charles Hulme. Součástí této metodologie je manuál, texty pro účastníky testování, formulář pro testujícího na zápis výsledků a „single word reading test“, tedy test čtení jednotlivých slov. Každý účastník nejprve splnil test čtení jednotlivých slov a podle výsledků tohoto testu mu byl přiřazen text. Textů na čtení je sedm a jsou odstupňované podle úrovní. Podle výsledků čtení textu byl poté účastníkovi přiřazen text druhý, buďto o stupeň snazší, nebo o stupeň těžší. Každý účastník tedy ve výsledku četl test na jednotlivá slova a poté dva texty. Celé testování bylo nahráváno a nahrávky byly následně zpracovány.

Pro získání výsledků byla použita kvantitativní i kvalitativní analýza. Pro kvantitativní analýzu byly použity statistické nástroje t-test a anova. Typy chyb, které účastníci dělali, byly rozděleny na šest skupin – přeřeky, záměny, odmítnutí, vynechání, přidání a prohození. Přeřeky a záměny byly nejčastějším typem chyb, a proto byly kvantitativně zkoumány rozdíly mezi těmito dvěma typy chyb u obou skupin účastníků, ale také rozdíly mezi skupinami účastníků v každém z těchto dvou typů chyb. Dále byla měřena přesnost a rychlost čtení, a i tyto dvě kategorie byly kvantitativně analyzovány. V kvalitativní analýze byly poté zkoumány konkrétní chyby, které se objevovaly nejčastěji, a zda se způsob tvoření chyb opakoval u různých slov.

T-testy ukázaly, že žáci dělali signifikantní rozdíl v počtu chyb mezi přeřeky a záměnami. Signifikantní rozdíl mezi dvěma skupinami účastníků však ukázal pouze jeden ze čtyř testů: skupina raně sekvenčně bilingvních se dopouštěla signifikantně méně záměn než skupina pozdně sekvenčně bilingvních. Kvalitativní analýza prokázala, že mezi nejčastější typy chyb u českých žáků patří čtení anglických slov způsobem grafém-foném nebo zaměňování samohlásky za jinou, popřípadě kombinace obojího.

Skutečnost, že výsledky neukazují rozdíl mezi oběma testovanými skupinami, může být způsobena dvěma faktory – buďto mezi těmito skupinami nemá věk ve kterém se začaly učit cizí jazyk na výslovnost vliv, nebo může být chyba na straně aprobovanosti a vzdělanosti vyučujících.

9. Appendix

Translation of the MŠMT schedule

The expected outputs of the speech skills are that the pupils should understand simple instructions and questions of the teacher, if the instruction is carefully and understandably conveyed. The pupils can react to those instructions and questions verbally or non-verbally. The pupils can also repeat and use words and phrases that were used during classes. They can understand the meaning of short written text, if they have visual aids to help them. They understand short and simple spoken text, if the text is delivered clearly, or if the pupils have visual aids to help them. They can match the spoken and written forms of words or phrases and they can write words and short sentences based on textual or visual model. The bare minimum that the pupil must be proficient in is knowing the sound form of English. (own translation) (RVP 25)

When it comes to listening skills with understanding, the pupils should be able to understand easy instructions and questions, understand simple words sentences as long as they relate to the discussed topics. Visual aids can also be used. The pupils should understand simple listening tasks, visual aids can be used, and the text needs to be uttered clearly. The bare minimum is understanding the instructions of the teacher and understanding words, that were repeatedly used during lessons – mainly greetings and acknowledgements. (own translation) (RVP 25)

Basics of communication skills should also be acquired. The pupils should be able to participate in simple dialogues, they can say some basic information about themselves, their family, school, free time and other topics covered in lessons. They can answer simple questions relating to themselves, and other mentioned topics. They should also be able to ask simple questions. The bare minimum is knowing how to greet someone and how to say thank you, telling their own name and age, expressing agreement or disapproval and reacting to simple questions, with the help of visual aids. (own translation) (RVP 25, 26)

Reading skills are also part of the plan. The pupils should be able to find necessary information in a simple written text that relates to the acquired topics and they should understand short easy texts relating to everyday life, with the help of visual aids. The bare minimum is understanding words that have been repeatedly used in lessons. (own translation) (RVP 26)

The last part is writing skills. In this part, the pupils should be able to write a short text using short simple sentences and phrases about themselves, their family, activities that they do in their free time or about their everyday life. They can fill out their personal information in a form. The bare minimum is knowing the graphic form of English. (own translation) (RVP 26)

In the higher-level classes, this acquired information is further developed. In listening, the pupils should be able to understand information in listening exercises and also in a conversation that relates to topics discussed in class. The bare minimum is understanding questions about themselves. In communication, they should be able to ask about some basic information and react accordingly in a formal or informal situation. They can talk about the acquired topics, mainly about themselves, school and their friends. They should also be able to tell a short story or describe an event, they should also be able to describe people, places and things from their everyday life. Bare minimum is to be able to talk about themselves. When it comes to reading, pupils should be able to find useful information in short and simple authentic materials and understand those materials. The bare minimum of that would be understanding the vocabulary and sentences in the repeated topics. In writing skills, pupils should be able to fill in a basic form with information about themselves, write basic texts about themselves, their family, school and their free time and they should also react to an easy written task. The bare minimum would be reacting to simple texts about themselves. (own translation) (RVP 26, 27)

Generally, in the lower level pupils are taught basics of pronunciation, the relationship between sound and written form of words, basic lexicon useful for communication relating to the acquired topics and basic grammar structures and sentence types. The topics that are generally talked about in lessons are home, family, free time, professions, the human body, food, clothing, shopping, hometown, means of transport, the year (along with holidays, the four seasons, days of the week and telling time), animals, nature and weather. In the higher level, pronunciation is getting cleared up and phonological skills are getting overall better (for example, differentiating word and sentence stress or intonation), the pupils also start using vocabularies and should be able to work with them. Grammar is getting used for communicative purposes, some fundamental mistakes are overlooked as long as the message the pupil is trying to convey is understandable. The topics used in lessons are home, family, living, school, free time, culture, sport, health, feelings and moods, eating habits, weather, nature and the city, shopping and fashion, the problems of society, picking

a future profession, new technologies and media, travelling or foreign countries and their realia. (own translation) (RVP 26, 27)

Table of qualifications

Table 43 - qualifications

Sledované ukazatele kvalifikovanosti	Základní škola		Gymnázium		Ostatní SŠ	
	AJ	NJ	AJ	NJ	AJ	NJ
VŠ odborná kvalifikace pro výuku CJ na 1. st.	12,9	1,5	0,0	0,0	0,0	0,0
VŠ odborná kvalifikace pro výuku CJ	24,7	36,8	92,0	88,0	50,0	66,7
Ostatní - kvalifikován s VŠ	33,9	55,8	2,2	3,6	14,4	23,9
Rodilý mluvčí	2,2	0,0	2,3	0,0	0,0	0,3
Nekvalifikován s VŠ	10,1	0,0	2,3	4,2	17,8	3,0
Nekvalifikován bez VŠ	16,2	5,9	1,2	4,2	17,8	6,1

Full tables of mistakes

Here I am reporting the full tables of mispronunciations for the first three texts.

Table 44 - beginners text

group	word	pronunciation	no. of occurrences
kindergarten	into	intə	4
kindergarten	a	a	3
kindergarten	anna	ejn	2
kindergarten	dad	dʌd	2
kindergarten	hall	hɑ:l	2
kindergarten	outfit	ɔʊtfɪt	2
kindergarten	put	pʌt	2
kindergarten	bedroom	bedrɒm	1
kindergarten	bedroom	du:brəm	1
kindergarten	outfit	ɔ:trɪft	1
kindergarten	outfit	ʊtfi:n	1
kindergarten	put	pi:t	1
kindergarten	tea	tea	1
kindergarten	to	tə	1
school	into	intə	8
school	to	tə	7
school	anna	ejn	4
school	hall	hʌl	4
school	a	a	3
school	had	hʌt	3
school	outfit	ɔ:tfɪt	3
school	and	ʌnt	2
school	outfit	oʊtfɪt	2
school	tea	te:a	2
school	dad	bʌt	1

<i>school</i>	for	fer	1
<i>school</i>	hall	healt	1
<i>school</i>	into	ind	1
<i>school</i>	outfit	u:tfɪt	1
<i>school</i>	put	pʊt	1
<i>school</i>	tea	teɪ	1
<i>school</i>	tea	ti:jʌ	1
<i>school</i>	tea	te:jʌ	1
<i>school</i>	ut	pʌt	1

Table 45 - text 1

<i>group</i>	<i>word</i>	<i>pronunciation</i>	<i>no. of occurrences</i>
<i>kindergarten</i>	smaller	smʌlɹ	12
<i>kindergarten</i>	was	vez	12
<i>kindergarten</i>	hug	hʊk	9
<i>kindergarten</i>	was	vʌz	8
<i>kindergarten</i>	clicked	klɪkɪt	7
<i>kindergarten</i>	cloud	klʊt	6
<i>kindergarten</i>	looked	lʊkɪt	6
<i>kindergarten</i>	a	a	5
<i>kindergarten</i>	bumped	bʊmpɪt	5
<i>kindergarten</i>	replied	replɪ:t	5
<i>kindergarten</i>	shut	ʃʊt	5
<i>kindergarten</i>	asked	ʌksɪt	4
<i>kindergarten</i>	bumped	bʌmpɪt	4
<i>kindergarten</i>	he	he:	4
<i>kindergarten</i>	Jack	jʌtsk	4
<i>kindergarten</i>	suddenly	sʊdnɪ	4
<i>kindergarten</i>	was	vɪz	4
<i>kindergarten</i>	gave	geɪ	3
<i>kindergarten</i>	just	jʊst	3
<i>kindergarten</i>	looked	lʊkɪt	3
<i>kindergarten</i>	out	ʊt	3
<i>kindergarten</i>	trembled	treɪmblɪt	3
<i>kindergarten</i>	trembled	treɪmblɪ:t	3
<i>kindergarten</i>	what	vʌt	3
<i>kindergarten</i>	asked	ɛskɪt	2
<i>kindergarten</i>	asked	ʌskɪt	2
<i>kindergarten</i>	away	ɛvɪ	2
<i>kindergarten</i>	became	bekʌm	2
<i>kindergarten</i>	before	bɛfɔ:	2
<i>kindergarten</i>	bumped	bʌmbɪt	2
<i>kindergarten</i>	clicked	klɪndʒɪnt	2
<i>kindergarten</i>	flown	flʊn	2
<i>kindergarten</i>	flown	flaʊn	2
<i>kindergarten</i>	going	gʊɪnk	2
<i>kindergarten</i>	had	hʌt	2

<i>kindergarten</i>	him	haim	2
<i>kindergarten</i>	never	never	2
<i>kindergarten</i>	people	pju:pl	2
<i>kindergarten</i>	people	peəpl	2
<i>kindergarten</i>	replied	repli:et	2
<i>kindergarten</i>	replied	replet	2
<i>kindergarten</i>	smaller	smʌler	2
<i>kindergarten</i>	that	thʌt	2
<i>kindergarten</i>	the	de	2
<i>kindergarten</i>	the	thi:	2
<i>kindergarten</i>	asked	eskɪt	1
<i>kindergarten</i>	asked	æskət	1
<i>kindergarten</i>	away	ejvej	1
<i>kindergarten</i>	away	i:vei	1
<i>kindergarten</i>	away	ʌvaɪ	1
<i>kindergarten</i>	became	bʌkʌm	1
<i>kindergarten</i>	became	bɪke:m	1
<i>kindergarten</i>	became	bekam	1
<i>kindergarten</i>	became	betsʌme	1
<i>kindergarten</i>	became	bekəm	1
<i>kindergarten</i>	before	bi:fər	1
<i>kindergarten</i>	before	befoʊr	1
<i>kindergarten</i>	before	befɔ:ri	1
<i>kindergarten</i>	before	befɔ:re	1
<i>kindergarten</i>	bumped	bʌmɪt	1
<i>kindergarten</i>	bumped	bʊmbi:t	1
<i>kindergarten</i>	bumped	bʊber	1
<i>kindergarten</i>	clicked	klɪkɪnt	1
<i>kindergarten</i>	cloud	klrət	1
<i>kindergarten</i>	far	fe:ɪr	1
<i>kindergarten</i>	far away	*mumbling*	1
<i>kindergarten</i>	flown	frɔ:vr	1
<i>kindergarten</i>	gave	dʒɪ:f	1
<i>kindergarten</i>	gave	gi:f	1
<i>kindergarten</i>	gave	gve	1
<i>kindergarten</i>	happy	hʌpɪ	1
<i>kindergarten</i>	hug	hek	1
<i>kindergarten</i>	Jack	ɪek	1
<i>kindergarten</i>	Jack	jʌts	1
<i>kindergarten</i>	just	tʃɪk	1
<i>kindergarten</i>	just	ju:st	1
<i>kindergarten</i>	looked	lʊkɪt	1
<i>kindergarten</i>	looked	lʊkɪt	1
<i>kindergarten</i>	looked	looket	1
<i>kindergarten</i>	never	ni:rvr	1
<i>kindergarten</i>	out	ɔft	1
<i>kindergarten</i>	people	pjo:pl	1
<i>kindergarten</i>	people	peʊpl	1
<i>kindergarten</i>	people	pe:pe	1

<i>kindergarten</i>	plane	plΛne	1
<i>kindergarten</i>	replied	replide	1
<i>kindergarten</i>	replied	replait	1
<i>kindergarten</i>	replied	dʒɪmplɪnt	1
<i>kindergarten</i>	seat	s	1
<i>kindergarten</i>	seat	se:ʌt	1
<i>kindergarten</i>	she	ʃe	1
<i>kindergarten</i>	shut	sɒnt	1
<i>kindergarten</i>	shut	su:t	1
<i>kindergarten</i>	shut	ʃɒt	1
<i>kindergarten</i>	shut	ʃrt	1
<i>kindergarten</i>	smaller	smΛjler	1
<i>kindergarten</i>	smaller	smΛjlr	1
<i>kindergarten</i>	smaller	smʌli:r	1
<i>kindergarten</i>	suddenly	sɒdenli:	1
<i>kindergarten</i>	suddenly	sju:dnli	1
<i>kindergarten</i>	suddenly	sɒdenlɑ:i	1
<i>kindergarten</i>	suddenly	su:denli	1
<i>kindergarten</i>	suddenly	sɒndaili	1
<i>kindergarten</i>	suddenly	sɒden	1
<i>kindergarten</i>	that	the	1
<i>kindergarten</i>	the	dei:	1
<i>kindergarten</i>	then	then	1
<i>kindergarten</i>	then	thi:n	1
<i>kindergarten</i>	this	thɪz	1
<i>kindergarten</i>	trembled	trembelet	1
<i>kindergarten</i>	trembled	tremblen	1
<i>kindergarten</i>	trembled	trʌmblet	1
<i>kindergarten</i>	trembled	tremple	1
<i>kindergarten</i>	trembled	trɒmbrend	1
<i>kindergarten</i>	was	vʌʃ	1
<i>kindergarten</i>	was	vʌt	1
<i>school</i>	was	vʌz	27
<i>school</i>	was	vez	13
<i>school</i>	clicked	klɪket	12
<i>school</i>	smaller	smʌlər	11
<i>school</i>	asked	ʌsket	9
<i>school</i>	bumped	bɒmpet	8
<i>school</i>	cloud	kloʊt	8
<i>school</i>	looked	lɒket	7
<i>school</i>	a	a	6
<i>school</i>	hug	hɒk	6
<i>school</i>	replied	repli:t	6
<i>school</i>	suddenly	sɒdenli	6
<i>school</i>	trembled	trembled	6
<i>school</i>	he	he	5
<i>school</i>	just	jɒst	5
<i>school</i>	looked	lɒket	5
<i>school</i>	out	oʊt	4

<i>school</i>	what	vʌt	4
<i>school</i>	before	befɔr	3
<i>school</i>	before	befr	3
<i>school</i>	bumped	bʊmbɪ:d	3
<i>school</i>	flown	flɔvn	3
<i>school</i>	looked	lʊkɪt	3
<i>school</i>	mum	mʊm	3
<i>school</i>	replied	replɪt	3
<i>school</i>	replied	replɪjet	3
<i>school</i>	shut	ʃʊt	3
<i>school</i>	smaller	sma:lɹ	3
<i>school</i>	asked	eskɪt	2
<i>school</i>	became	bekʌme	2
<i>school</i>	before	bi:fr	2
<i>school</i>	bumped	bʌmpɪt	2
<i>school</i>	gave	geɪ	2
<i>school</i>	people	peopl	2
<i>school</i>	replied	ripli:t	2
<i>school</i>	smaller	sma:ler	2
<i>school</i>	smaller	smɔler	2
<i>school</i>	smaller	smʌler	2
<i>school</i>	that	θʌt	2
<i>school</i>	trembled	trembli:t	2
<i>school</i>	trembled	trʌmplet	2
<i>school</i>	a	e:	1
<i>school</i>	and	ʌnt	1
<i>school</i>	asked	e:skɪt	1
<i>school</i>	asked	eski:d	1
<i>school</i>	asked	eskɪt	1
<i>school</i>	asked	skʌt	1
<i>school</i>	away	evɑ:j	1
<i>school</i>	away	ʌjvʌj	1
<i>school</i>	away	ʌvaɪ	1
<i>school</i>	away	ʌvej	1
<i>school</i>	became	bejkʌme	1
<i>school</i>	became	bekɔm	1
<i>school</i>	became	beknejm	1
<i>school</i>	became	bekʌm	1
<i>school</i>	became	bi:kmeɪk	1
<i>school</i>	became	bi:kʌm	1
<i>school</i>	became	bɔkɪm	1
<i>school</i>	became	bɪkɔm	1
<i>school</i>	before	befɔre	1
<i>school</i>	bumped	bembɪd	1
<i>school</i>	bumped	bʊmet	1
<i>school</i>	bumped	du:pɪ	1
<i>school</i>	bumped	pʌmpi:t	1
<i>school</i>	clicked	fɪkɪt	1
<i>school</i>	clicked	klɪkɪt	1

<i>school</i>	clicked	tslɪnsklet	1
<i>school</i>	flown	flɔ:t	1
<i>school</i>	gave	gi:f	1
<i>school</i>	gave	gʌf	1
<i>school</i>	going	gɔ:nɪŋk	1
<i>school</i>	going	goɪ	1
<i>school</i>	him	gɪm	1
<i>school</i>	him	hɪv	1
<i>school</i>	holiday	hɔ:lɪdaɪ	1
<i>school</i>	hug	hu:	1
<i>school</i>	hug	hʌŋk	1
<i>school</i>	just	ʃʊŋ	1
<i>school</i>	looked	lɔ:kɪt	1
<i>school</i>	looked	lu:kət	1
<i>school</i>	never	never	1
<i>school</i>	people	pəpl	1
<i>school</i>	people	pəple	1
<i>school</i>	people	pejpl	1
<i>school</i>	people	pu:pl	1
<i>school</i>	plane	plʌne	1
<i>school</i>	replied	replɪk	1
<i>school</i>	replied	ri:plɪ	1
<i>school</i>	seat	seɪt	1
<i>school</i>	seat	si:ʃet	1
<i>school</i>	shut	hɔ:t	1
<i>school</i>	shut	sɔ:t	1
<i>school</i>	shut	ʃɔ:t	1
<i>school</i>	shut	ʃɪʊt	1
<i>school</i>	shut	ʃʊt	1
<i>school</i>	shut	sɔ:t	1
<i>school</i>	smaller	smɛr	1
<i>school</i>	smaller	smʌjlɪ	1
<i>school</i>	suddenly	stɔ:dli	1
<i>school</i>	suddenly	stʌndtli	1
<i>school</i>	suddenly	sɔ:denlaɪ	1
<i>school</i>	suddenly	sɔ:tneli	1
<i>school</i>	suddenly	sʌndli	1
<i>school</i>	that	dheat	1
<i>school</i>	that	dheɪs	1
<i>school</i>	that	thes	1
<i>school</i>	that	vʌ	1
<i>school</i>	then	dnen	1
<i>school</i>	trembled	trembelet	1
<i>school</i>	trembled	tri:mplet	1
<i>school</i>	trembled	trɪmblend	1
<i>school</i>	trembled	tromplɪ	1
<i>school</i>	was	vʌ:s	1
<i>school</i>	what	vet	1
<i>school</i>	what	vheɪs	1

Table 46 - text 2

<i>group</i>	<i>word</i>	<i>pronunciation</i>	<i>no. of occurrences</i>
<i>kindergarten</i>	also	ʌlsə	8
<i>kindergarten</i>	find	find	6
<i>kindergarten</i>	breast	bri:st	5
<i>kindergarten</i>	danger	dʌŋgr	5
<i>kindergarten</i>	a	a	4
<i>kindergarten</i>	other	ɔðr	4
<i>kindergarten</i>	also	elsə	3
<i>kindergarten</i>	pale	pɑ:l	3
<i>kindergarten</i>	all	ɑ:l	2
<i>kindergarten</i>	bright	brikt	2
<i>kindergarten</i>	danger	dʌndʒr	2
<i>kindergarten</i>	even	e:vn	2
<i>kindergarten</i>	land	lʌnt	2
<i>kindergarten</i>	pale	pɔ:l	2
<i>kindergarten</i>	sometimes	sʌmtɪms	2
<i>kindergarten</i>	to	tə	2
<i>kindergarten</i>	also	ʌlsʊ	1
<i>kindergarten</i>	an	ʌn	1
<i>kindergarten</i>	berries	beriez	1
<i>kindergarten</i>	berries	bʌriez	1
<i>kindergarten</i>	breast	brejst	1
<i>kindergarten</i>	breast	briest	1
<i>kindergarten</i>	bright	birgin	1
<i>kindergarten</i>	coat	koat	1
<i>kindergarten</i>	danger	dengr	1
<i>kindergarten</i>	each	i:j	1
<i>kindergarten</i>	each	i:k	1
<i>kindergarten</i>	each	i:ʃ	1
<i>kindergarten</i>	each	i:x	1
<i>kindergarten</i>	even	even	1
<i>kindergarten</i>	even	evn	1
<i>kindergarten</i>	fight	fidʒt	1
<i>kindergarten</i>	fight	fikt	1
<i>kindergarten</i>	insects	ɪntsekt	1
<i>kindergarten</i>	insects	lɪtsen	1
<i>kindergarten</i>	land	lɑ:n	1
<i>kindergarten</i>	main	medʒɪn	1
<i>kindergarten</i>	neck	neks	1
<i>kindergarten</i>	pale	pel	1
<i>kindergarten</i>	pockets	pɒkets	1
<i>kindergarten</i>	pockets	pɔskets	1
<i>kindergarten</i>	pots	poots	1
<i>kindergarten</i>	pots	pu:ts	1
<i>kindergarten</i>	reddish	redɪŋ	1

<i>kindergarten</i>	reddish	redn	1
<i>kindergarten</i>	scraps	krʌmps	1
<i>kindergarten</i>	scraps	skrʌpz	1
<i>kindergarten</i>	sometimes	sɔmti:s	1
<i>kindergarten</i>	spots	spoʊst	1
<i>kindergarten</i>	their	eɪr	1
<i>kindergarten</i>	wall	vʌl	1
<i>kindergarten</i>	when	vi:n	1
<i>kindergarten</i>	worms	voʊmz	1
<i>school</i>	danger	dengr	4
<i>school</i>	also	elsə	3
<i>school</i>	also	ʌlsə	3
<i>school</i>	also	ʌlsə:	3
<i>school</i>	are	e:r	3
<i>school</i>	bank	bʌnk	3
<i>school</i>	breast	bri:st	3
<i>school</i>	danger	dʌndʒr	3
<i>school</i>	all	ɑ:l	2
<i>school</i>	all	el	2
<i>school</i>	danger	dʌngr	2
<i>school</i>	even	evn	2
<i>school</i>	land	lʌnt	2
<i>school</i>	to	tə	2
<i>school</i>	when	vi:n	2
<i>school</i>	a	a	1
<i>school</i>	also	ʌlsu:	1
<i>school</i>	are	ʌre	1
<i>school</i>	berries	berijez	1
<i>school</i>	berries	bi:ries	1
<i>school</i>	berries	brʌjks	1
<i>school</i>	breast	brejst	1
<i>school</i>	bright	brikt	1
<i>school</i>	but	bʊt	1
<i>school</i>	coat	ət	1
<i>school</i>	coat	kə:t	1
<i>school</i>	coat	kəjt	1
<i>school</i>	each	eɪʃ	1
<i>school</i>	each	i:ʃ	1
<i>school</i>	fight	fidʒt	1
<i>school</i>	fight	fikt	1
<i>school</i>	fight	fɪnt	1
<i>school</i>	fight	flɪtʃ	1
<i>school</i>	hole	hə:l	1
<i>school</i>	hole	hu:l	1
<i>school</i>	insects	ɪnkri:ms	1
<i>school</i>	insects	ɪnset	1
<i>school</i>	insects	ɪnt	1
<i>school</i>	insects	ɪntsent	1
<i>school</i>	insects	ɪntsket	1

<i>school</i>	main	maɪn	1
<i>school</i>	nest	ni:s	1
<i>school</i>	nest	ni:sr	1
<i>school</i>	nests	nejst	1
<i>school</i>	other	ɔ:dr	1
<i>school</i>	other	u:tr	1
<i>school</i>	pale	pəjl	1
<i>school</i>	pots	poʊts	1
<i>school</i>	pots	pu:ts	1
<i>school</i>	reddish	ri:dɪndʒ	1
<i>school</i>	reddish	ri:dɪʃ	1
<i>school</i>	round	raʊnd	1
<i>school</i>	scraps	skræps	1
<i>school</i>	sometimes	səʊtvaɪz	1
<i>school</i>	sometimes	sʌmeti:m	1
<i>school</i>	spots	spu:ts	1
<i>school</i>	spots	spu:ts	1
<i>school</i>	they	ðej	1
<i>school</i>	they	ti:	1
<i>school</i>	wall	vɔ:l	1
<i>school</i>	with	vɪt	1