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BAKALÁŘSKÁ PRÁCE

The Phenomenon of Epenthesis in the Speech of Spanish and Arabic Learners of English

Epenteze v mluvě španělských a arabských studentů anglického jazyka

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Prohlašuji, že jsem bakalářskou práci na téma Epenteze v mluvě španělských a arabských studentů anglického jazyka vypracovala pod vedením vedoucího práce samostatně za použití v práci uvedených pramenů a literatury. Dále prohlašuji, že tato práce nebyla využita k získání jiného nebo stejného titulu.

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Podpis

ANOTACE

Cílem této práce je zjistit, v jakém prostředí se epentetické zvuky nejčastěji objevují v řeči španělských a arabskýsh studentů angličtiny. Dále bude zkoumána kvalita epentetických hlásek, a to metodou poslechové analýzy nahrávek rodilých Španělů a Arabů. Práce se zaměřuje především na samohláskovou epentezi a na to, jak španělští a arabští mluvčí používají epentezi na vyřešení nelegálních kombinací souhlásek v mezinárodním jazyce. Za účelem výzkumu nelegálních kombinací souhlásek v práce jsou popsané a porovnané struktury slabik a pravidla fonotaktiky angličtiny, španělštiny a arabštiny.

KLÍČOVÁ SLOVA

epentetické zvuky, slabika, negativní transfer

ANNOTATION

The aim of this work is to find out in which environments epenthetic sounds mostly occur in the speech of Spanish and Arabic learners of English. The thesis will, additionally, try to survey the quality of epenthetic sounds through the analysis of the recordings made by Spanish and Arabic speakers. The work mainly focuses on vowel epenthesis and on how Spanish and Arabic speakers use it as a tool of breaking up illegal consonantal clusters in the interlanguage. In order to research illegal consonantal clusters, syllable structures of English, Spanish and Arabic, as well as their phonotactical rules, are described and compared.

KEY WORDS

epenthetic sounds, syllable structure, negative transfer

Table of Contents

Introduction

Vowel epenthesis is claimed to be one of the main devices used by speakers from all around the world in order to resolve illegal consonantal clusters and aid the fluency of their speech. Its historical roots, diachronic development and current use are described in detail in many scientific papers, theses and journals. However, many areas concerning the concept are still either not fully researched or appear to be controversial amongst linguists. The aim of this paper is not to debate or negate the existing studies, but to thoroughly investigate all the available and current research and use it as a basis for the practical part of the thesis.

The thesis focuses on vowel epenthesis in interlanguage produced by native Arabic and Spanish speakers of English. The main goal of the paper is to detect in what instances the epenthesis is used by the speakers, how the phonetical environment affects the process and why epenthesis prevails over all other tools used for breaking up consonant clusters among speakers of foreign languages.

The theoretical part of the thesis introduces readers to the languages, which feature the use of vowel epenthesis in Arabic, Spanish and English, with English being the target language (TL) of native Arabic and Spanish speakers. General description of historical developments of all three languages is featured in the thesis, in order for the readers to get acquainted with their roots, and their current position in the linguistic world. However, the crucial element of the theoretical part is the interpretation of syllable structures of the languages and their phonotactical rules. Epenthesis is heavily dependent on and is governed by the rules of phonotactics, which makes it an inseparable part of any study that focuses on epenthesis.

The description of the languages and their syllable structures is followed, in the thesis, by the segment which addresses studies and theories on second language acquisition and negative transfer. The segment mainly focuses on reasons why the speakers make mistakes in their studies of foreign languages and to what extent their first language (L1) is to blame for that.

Later on, the phenomenon of epenthesis itself is described in detail. The thesis gives a detailed account of the quality and placement of epenthetic vowels in both Arabic and Spanish, and looks into other tools of resolving illegal consonant clusters, such as deletion. The paper further reflects on the role of perception in the process of epenthesis and on how it has been studied by linguists.

In the practical part of the thesis, the survey that has been conducted on native Arabic and Spanish speakers is described. In order to analyze the phenomenon of vowel epenthesis, the

recordings of a text in English, made by native Spanish and Arabic speakers, featuring potential problematic areas, were obtained and examined. It is important to mention that the experiment was not conducted in order to discover new, unknown information, but to establish to which extent the results would comply with the theories, ideas and hypotheses recounted in the theoretical part of the thesis.

Theoretical Part

The theoretical part of the thesis acquaints the readers with the background information on the languages that are studied in the thesis. Chapter 1 recounts general information about Arabic, its sound system and syllable structures. The similar account of the Spanish language is presented in chapter 2, while chapter 3 chronicles the information about English, which is of importance to the research. The description of three languages is completed by the comparison of their syllable structures in chapter 4.

The theoretical part continues with the presentation of second language acquisition and negative transfer, chapter 5. The section is vital for comprehending the reasons behind any mistakes being made by foreign language students, including mistakes in pronunciation.

Chapter 6 introduces the readers to the phenomenon of epenthesis and presents various studies on the topic, specifically concerning Spanish and Arabic speakers. The chapter is followed by a short account of English as a lingua franca and lingua franca core, presented in chapter 7, which closely looks at epenthesis vs. deletion as ways of solving consonant clusters.

1 General Description of the Arabic Language

Arabic belongs to the southwestern group of Semitic languages. The earliest texts in Arabic that were discovered are believed to have been composed in the first century A.D. (Holes 10). Certainly, since then Arabic has undergone major changes.

Arabic is one of the world languages and is spoken throughout many countries and even continents. Arabic is the official language of twenty countries, located in the Middle East and Africa: Saudi Arabia, Yemen, Egypt, Somalia, Algeria, Morocco, et cetera. In some of these countries Arabic is not the only official or spoken language. For instance, while Arabic, alongside Berber, is one of the official languages in Algeria and Morocco, both countries recognize and use French, mainly as the language of education. According to the recent calculations, there are approximately 250 million native speakers of Arabic. Since 1971 Arabic has been one of the official languages of the United Nations (Holes 1).

The usage and form of Arabic varies in forms of dialects from one country to another. The situation is quite similar amongst Spanish dialects. For example, Morocco Arabic and Algerian Arabic differ in vocabulary, and what is even more important to us, pronunciation. Those differences are so vast that at times people from two Arabic speaking countries cannot understand one another (Petráček 10, as translated by Pirogova).

The thesis focuses on the core of Modern Standard Arabic (MSA), which is considered to be the most formal form of the language. MSA could be described as a modernized version of so-called Classical Arabic (CL), the language of Koran and prayer. MSA is the language of modern Arabic literature, newspapers, TV podcasts, any kind of official communication and education in all Arab countries. "It is, then, a standardized overall system serving as a lingua franca for communication among educated Arabs" (Kopczynski and Mellani, *Consonants* 193). MSA is the language Arabs from different parts of the world that speak in different dialects turn to in order to be understood. Despite differences in vocabulary, the syntactic structure of MSA is similar throughout all Arabic speaking countries (Holes 6).

1.1 Sound system of Arabic

Arabic is an example of a language with one-to-one correspondence between a grapheme and a phoneme. Letters of the Arabic alphabet stand for all the consonantal sounds of this language (Ryding 14). Arabic consists of 28 consonants, 6 vocals and 2 diphthongs.

Modern Standard Arabic, as most semitic languages, has quite an elaborate system of consonants. There are 28 consonants, which could be devided into several groups. The first classification includes emphatic and non-emphatic consonants. The next division involves the manner of articulation, according to which Arabic consonants belong to stops, fricatives, nasals, laterals, flaps, affricates and semivowels. Even though this system is quite similar to the English one, some difficulties could be detected. For example, not all Arabic stops, affricates and/or fricatives have voiced and voiceless counterparts. As a result there is no voiced counterpart to fricative /f/ and no voiceless counterpart to affricate /ʤ/ (Kopczynski and Mellani, *Consonants* 194). It must be noted that unlike in English or Czech, in Arabic consonants at the end of a word do not lose their voice, or become devoiced (Petráček 17, as translated by Pirogova).

Another peculiarity of Arabic, noticeable for non-native speakers, is the rich variety of guttural sounds, produced at the back of the oral cavity. The phenomenon often causes troubles for learners of Arabic, since guttural sounds are not common amongst Germanic (English) or Romanic (Spanish) languages.

In Arabic there are much fewer vowels than consonants. The interesting thing is that in the written form vowels are not represented at all. It means that when you read Arabic, only consonantal sounds are written down. Native speakers simply know when and where they are supposed to insert vocalic sounds. For learners of Arabic, special signs, indicating what kind of vowel is to follow, are presented. For instance, the sound /u/ is represented by the sign over the consonant sound, which precedes the vowel as in بُ /bu/. The sound /i/ is represented by a

diagonal line under the consonant sound, which precedes the vowel, as evident from the next picture بِ /bi/. Lastly, the sound /a/ is represented by a diagonal line over the consonant sound, which precedes the vowel as in بَ /ba/ (Kapliwatzky 1).

There are just six vowels in Modern Arabic. They could be divided into two groups, specifically, short vowels /a/, /i/ and /u/, as well as long vowels /a:/, /i:/ and /u:/ (Kopczynski and Meliani, *Vowels* 184).The length of vowels in Arabic, unlike in English, influences and changes the meaning. For example /qa:ma/ means 'he stood up', whereas /qa:ma:/ means 'two of them stood up' (Petráček 17, as translated by Pirogova). Since the vowel length in Arabic contributes to the meaning of a word we must view long vowels and their short counterparts as separate, distinguishable phonemes, not allophones.

1.2 The position of vowels in a word

In Arabic, vowels never appear in initial position (Kopczynski and Meliani, *Vowels* 184). Arabic syllables must start with a consonantal sound. It may confuse some learners of Arabic, considering words such as *Allah* or definite article *al*, for non-native speakers of Arabic, seem to be starting with a vowel. However, such an impression is misleading. In both of these examples, or any such similar case, vowel sound is preceded by a glottal stop called hamza, which is considered to be a consonant in Arabic. In transcription the presence of hamza is shown by an inverted comma /'al/, while in other editions it is presented by the IPA phonetic symbol /ʔ/, as in /ʔal/ (Kopczynski and Meliani, *Vowels* 184). As a result of this phonotactical rule, loanwords beginning with a vowel are often altered by the insertion of epenthetic consonantal sound before the initial vowel. Most of the time, epenthetic consonant of choice is /ʔ/. Final or medial position of a vowel is quite common in Arabic.

1.3 Syllable structure of Arabic

Certain syllable structure rules apply to Modern Standard Arabic (MSA) as well as every dialect. Firstly, all syllables in Arabic could be classified as open (CV) and closed (CVC) ones. Secondly, Arabic syllable cannot start with a vowel, or with more than one consonant, which means that every syllable in Arabic begins either with CV (consonant + short vowel), or CVV (consonant + long vowel) structure. Thirdly, no Arabic syllable can combine three or more consonants in a row (Ryding 34).

Different studies have contrastive approaches to the question of syllabic structure. However, most studies and research papers agree on the classification and differentiation of Arabic syllables into three categories. The first group includes light syllables. All syllables of this kind

follow the pattern CV, a consonant followed by a short vowel, for instance /ma/ in /ma.di:.na/ meaning *town*. The second group of syllables, referred to as heavy syllables, could be formed by a consonant followed by two short vowels or a diphthong (CVV), e.g /di:/ in /ma.di:na/ meaning *town*, /laj/ in /laj.la/ meaning *night*, or by a consonant followed by a short vowel and a consonant (CVC), e.g /mad/ in /mad.ra.sa/ signifying *school*. Lastly, superheavy syllables could contain a consonant followed by a short vowel, long vowel or a diphthong, which are followed by one or two consonants, for example:

CVVC (consonant+diphthong+consonant) /bajt/ - *house*

CVVC (consonant+long vowel+consonant) /tɑ:b/ - /ki.tɑ:b/ - *book*

CVCC (consonant+vowel+consonant+consonant) /ʃukr/ - *thanks*, /ʃams/ - *sun*

CVCC (consonant+vowel+double consonant) /chatt/ - *writing*

CVVCC (consonant+long vowel+double consonant) /ʃɑ:bb/ - *young*

In Arabic, it is illegal for more than one heavy or superheavy syllable to appear in a word. In the majority of cases, if such a syllable is present, it is located at the end of a word, e.g./ri.**jɑ:l**/ - *men*, /bi.**llawr**/ - *crystal* (Halpern, 42).

The classification described above is by no means, the only approach to the syllable structure in Arabic. Older publications, such as the one by Petráček, only distinguish three syllable types: open syllable with a short vowel (CV), open syllable with a long vowel (CVV) and closed syllable with a short vowel (CVC) (30, as translated by Pirogova). Such division, however, begs the question of how to analyze syllables that end with more than one consonant, such as /bint/ – *girl*.

In addition to superheavy syllables, Watson also distinguishes so-called, 'super-superheavy' syllables, which appear in the San'ani dialect. They follow the structure CVCCC as in /ma.kantʃ/ meaning *I was not* (*Phonology* 59). This type of syllable is extremely rare and appears only in the final position. If we take a closer look, it becomes evident that two final consonants in this particular type of syllable are always /t/ and /ʃ/. In order to justify the sequence of three consonants in a row, which is illegal according to all phonotactical rules of Arabic, Watson proposes a new approach to the classification of these two consonants and offers to look at them as a singular unit, an affricate /ʧ/ and not two separate consonants.

Watson supports her claim by analyzing the pronunciation of loanwords. For example, the word *sandwich*, which is borrowed from the English language, is pronounced as **[**sanda**wi:ʧ]**, with the stress shifting towards the last syllable. The insertion of the epenthetic sound /a/ after the

consonant /d/ proves that the speakers adjust the pronunciation of the word to follow the internal syllable structure in Arabic. Watson further backs up her assertion by presenting other examples of loan words, such as 'jelly', which is pronounced as [ji:li:], or [ʧi:li:] (*Phonology* 60). By her claim Watson denies the very existence of so called 'super-superheavy syllables'.

From the description presented above, one fact is evident: Arabic tends to avoid closed syllables and clusters of more than two consonants. It could be further illustrated by presenting and comparing the process of plural formation in Arabic and English.

In English, consonant clusters at the end of nouns are frequently created by adding letters in order to produce plural forms. For example: *chief-chiefs*, *job-jobs*, *plant-plants* etc. In Arabic, in order to form the plural, the internal structure of a word must be changed, as illustrated in Table 1.

Table 1

The formation of plural forms of nouns in Modern Standard Arabic

Singular	**Plural**	**Translation**
madrasat-un	madaris-u	school/schools
maktab-un	makatib-u	office/offices
miftah-un	mafatih-u	key/keys

Source: Watson, Janet C. E. *The Phonology and Morphology of Arabic*. New York: Oxford University Press, 2002. Print.

As we can see, this kind of formation does not result in extra consonantal sounds being added to the word. In fact, quite the opposite happens and internal CC structures (ma.**dr**a.sat-un)within the word are broken down by the insertion of a vocalic sound CAC (ma.**da**.ris-u).

2 General description of the Spanish language

Spanish is a world language, spoken by millions of people around the world. It is an official language of such countries as Spain, Mexico, Cuba, Colombia and many others. There are more than 355 million native speakers of Spanish, as well as millions of others for whom Spanish is a second or even a third language (Penny 32).

Spanish is an example of a language with roots in the Indo-European language family, specifically the Romance language family. Other prominent examples of this specific language

family are Italian, French or Portuguese. All of those languages, including Spanish, are direct ancestors of Latin. Evidence of it become obvious if one decides to approach the language, specifically its vocabulary, diachronically. The interesting fact is Spanish did not descend from so-called Classical Latin (CL), but rather from its spoken, non-literary form. Penny refers to it as "Vulgar Latin" (5).

The process of the Romanization of Spain began approximately around the year 218 B.C. A little later on, began the widespread use of Latin as a language of prestige began (Penny, 8). Latin continued on, to be the language of culture and education for centuries, with different minor and major alterations, such as introduction of new suffixes, the adjustment of verb conjugations and, of course, new vocabulary.

The thirteenth century marks the beginning of Standard Spanish. During Alfonso's reign, Castilian became the language of administration and, as a result of constant usage in writing, it became standardized (Penny 20).

During the sixteenth century, Spanish went beyond the borders of the Iberian Peninsula and, thanks to the soldiers and settlers, was spread around the Balkans, Canaries the Americas and the Philippines (Penny 22). It was the beginning of Spanish as we know it today, with its countless dialects, accents and variations.

2.1 Sound system of Spanish

In comparison with English, Spanish vocalic structure is not as elaborate or numerous and consists of only five vowels /ɪ/, /e/, /a/, /o/, /u/, which could be classified into several groups. According to the horizontal position of the tongue vowels are classified into front vowels, e.g /e/, /ɪ/, central vowels, e.g. /a/ and back vowels, e.g. /o/, /u/. According to the vertical position of the tongue vowels are arranged into three groups, such as high/close vowels, e.g. /ɪ/ or /u/, mid vowels, e.g. /e/ or /o/ and low/open vowels, e.g. /a/. Unlike in Arabic, the length of a vowel does not contribute to the meaning of a word. The concept of vowel length in Spanish phonology is not relative.

In Spanish, vowels have the power to create the nucleus of the syllable (Čermák 43, as translated by Pirogova). Nevertheless, not all Spanish vowels could be syllable peaks. Spanish vowels /ɪ/ and /u/ are generally regarded as semivowels and described as transitioning from vocalic openness to consonantal narrowness. By themselves, in the same way as semiconsonants /w/ and /j/, they cannot create a syllabic peak (Čermák 70, as translated by Pirogova).

In Spanish, up to four vowels could stand next to one another in a row (Čermák 71, as translated by Pirogova). As a result, Spanish is very rich in different combinations of vowels. When two vowels appear together in the same syllable, they form a diphthong. Spanish has fourteen diphthongs, which could be divided into two groups, specifically, falling diphthongs (diptongos decrecientes), created by the linkage of two vowels, e.g. /ɑɪ/, /eɪ/, /ɔɪ/, and rising diphthongs (deptongos crecientes), created by the linkage of glides /w/ or /j/ and vowels, e.g. /ja/, /je/, /jɔ/, /ju/, /wa/, /we/, /wɔ/, /wɪ/ (Quilis 42, as translated by Pirogova).

When three vowels appear together in the same syllable, they form a triphthong. The peak of a triphthong is always created by the fully realized vowel /a/ or /e/, located in the middle, while the margins are occupied by semiconsonants and semivowels. There are four triphthongs in Spanish, such as /jaɪ/; /waɪ/, /weɪ/, /jeɪ/. Bartoš derives one more triphthong, /jɔɪ/ or /iɔɪ/. As an example the combination of words: *y hoy – and today*, is presented(42, as translated by Pirogova).

The approach to the classification of Spanish consonants is fairly similar to the English one. The majority of Spanish consonants are categorized into groups of voiced**,** e.g. /d/, /z/ and voiceless, e.g. /t/, /s/ consonantal sounds. Most phonological papers and textbooks divide and classify consonants by place of articulation and manner of articulation.

According to the manner of articulation Spanish consonants could be divided into several groups, such as plosives/stops, e.g. /p/, /t/, /d/, /b/, /k/, /g/, sibilants, e.g. /s/ (in some works described as groove fricatives), laterals, e.g. /l/, nasals, e.g. /m/, /n/, /ŋ/, fricatives, e.g. /f/, /θ/, /y/, /x/, flap /r/, vibrant /r/, affricate /ʧ/, approximants, e.g. /y/ or /r/ and trill /r/. According to the place of articulation Spanish consonants could be divided into groups of bilabial consonants, e.g. /p/, /b/, /m/, labiodental consonants, e.g. /f/, interdental consonants, e.g. /θ/, dental consonants, e.g. /t/, /d/, alveolar consonants, e.g. /s/, /l/, /r/, velar consonants, e.g. /k/, /g/, /x/ and palatal consonants, e.g. /ʧ/.

By observing the classification described above, some major differences in pronunciation in comparison to English could be discovered. For example, in Spanish, the voiced counterpart of labiodental consonant /f/ - /v/ does not exist. As a result, Spanish famously does not distinguish between the consonants /b/ and /v/, the way English does. In the place of the graphemes b and v the Spanish bilabial consonantal sound /b/ is pronounced as a plosive at the beginning of a word after a pause, e.g. *bueno*, *Valencia* or inside a word after nasal, as in words *cambiar*, *enviar*. However, in other positions, the consonant is pronounced as an approximant, e.g. *lavar*, *la bebida* (Čermák 78, as translated by Pirogova)

Dental consonant /d/ undergoes a similar process. The consonant is pronounced as a plosive at the beginning of a word or after the nasal /n/ or lateral /l/, e.g. *dónde, el día*. In the middle position, /d/ is pronounced as an approximant, as in words *cada*, *madre* (Čermák 83, as translated by Pirogova). It also important to mention, that unlike English alveolar consonants /t/ and /d/, Spanish /t/ and /d/ are produced dentally.

Spanish sounds /w/ and /j/ are generally described as glides. In some works the term semiconsonant could be found. Traditionally, glides are put in the category of consonantal sounds. However, semiconsonants could be represented as transitioning phonemes, they posess qualities of both consonantal and vocalic sounds and are generally described as moving from consonantal narrowness to vocalic openness (Čermák 48, as translated by Pirogova). Glides could not create the peak of a syllable. Semiconsonants /w/ and /j/ are also the first elements of all rising diphthongs.

2.2 Syllable structure of Spanish

The understanding of syllable structure is crucial in the study of epenthesis. The structure of a syllable predetermines the existence of epenthetic sounds and their place of appearance. What kinds of consonants and vowels appear in a syllable, as well the way they combine, is governed by the rules of phonotactics.

The structure of a syllable in Spanish is similar to English, however some differences could be detected. Every Spanish syllable must contain a peak, which is always occupied by a vowel, in contrast to English, which also permits consonants /l and /n/ to occupy the peak. A syllable peak is preceded by an onset, which is not an obligatory part of a syllable. A coda follows a peak and is, similarly to onset, not a mandatory part of a syllable. The positions of an onset and a coda have to be filled by consonants or consonant clusters. The absence of a coda in a syllable marks its openness (V or CV). If a coda is present, the syllable is closed (VC or CVC) (Čermák116, as translated by Pirogova).

According to the rules of Spanish phonotactics, the combinations of consonant clusters in the language are quite limited. The onset of a syllable is normally occupied by one consonant, less frequently by two. If a syllable is the first syllable in a word, any consonant, except the trills /r/ and /y/, as well as lateral /l/ followed by the vowel /i/, could appear. In instances when a syllable is not at the beginning of a word, any consonant could occupy the onset. If an onset is created by two consonants, possible cluster combinations are limited to /pr, br, fr, tr, dr, kr, gr, pl, bl, fl, kl, gl, tl, ps, ts/ (Čermák 118, as translated by Pirogova).

A coda, similarly to an onset, is typically created by one consonant, maximally by two. If a syllable is the last syllable of a word, a coda could be occupied by consonants /l, s, r, n, θ, d/. Quite rarely, isolated cases of words with a final coda created by consonantal sounds /t, b, f, k/ appear. Such cases are very unusual for Spanish, and for that reason, they are rarely fully realized, unless it is in a very slow, careful speech, e.g. *coñac* – [ko.ŋak] – [ko.ŋa]. A cluster of two consonants hardly ever creates a coda of the last syllable in a word. For the most part, those are borrowed words, such as *cinc* or *lord*. However, since these combinations are highly unusual for Spanish, they are often adjusted, either by an epenthetic vowel, or reduction as in a word *lord* – [lor] (Čermák 118, as translated by Pirogova).

In cases when a syllable is in the centre of a word, its coda could be occupied by consonants /l, s, r, d, n, p, b, t, k, g, θ/. The number of consonant clusters that could appear in this position is also limited to the next seven /st, ns, rs, bs, ds, ks, gs/ (Čermák 118, as translated by Pirogova).

Based on the information described above, it could be deduced that no more than two consonants could occupy Spanish onsets and codas (CCVCC). Based on the analysis of five different texts, performed by Zavadil and Čermák, the syllabic type CV is the most common one in Spanish, the least common one is CCVCC (95, as translated by Pirogova). According to another survey, performed by Zavadil and Čermák, only about 30% of consonants appear in any kinds of consonantal clusters, other 70% are surrounded by vowels, even across syllabic boundaries (101, as translated by Pirogova).

The description of consonantal clusters appearing inside the syllabic structure has been presented. In Spanish, however, there are also legal consonantal combinations across these boundaries. The combinations of two, three and even four consonantal sounds, although extremely rarely, could appear across syllabic boundaries. The most common CCC clusters are /ntr, mbr, str, mpr/, while exceptional CCCC clusters are represented by /kstr, kspl, nstr, kspr/. In Spanish there is a tendency to reduce such complex combinations (Zavadil and Čermák 103, as translated by Pirogova).

Such a variety of consonantal clusters inevitably leads to the question of syllabic boundaries. The process of syllabification might seem obvious; however, it is a much more complicated matter. Many linguists and speakers cannot agree even among themselves on how certain words, especially longer ones, must be divided into syllables. Linguists are trying to apply different methods in order to resolve this problem. For example, the use of bigram frequencies detects how often certain phonemes occur together. Eddington illustrates the hypothesis with an example of the word *anvil*. According to the bigram frequency, the letters AN co-occur 289 times, the

phonemes VI 324 times, while the letters NV occur together only five times. As a result, the syllabic boundary must be between the letters N and V, /an.vil/ (107).

3 General description of the English language

English is the youngest of all three languages described in this paper, and definitely the most widespread. In this paper we are going to examine Modern English (ME), which developed from Middle English, which, respectively, developed from Old English (OE). English is an example of an Indo-European language, specifically that of West Germanic group, with quite a long and complicated history.

Modern English has virtually nothing in common with Old English, the latter bearing a similarity to Modern German. It was an inflectial synthetic language. ME is a part of the Gemanic group only on the basis of its history and some limited vocabulary. The examples of the lost features of OE would be declension of adjectives, fixed word stress or grammatical gender (Bryant 23). However, some common features are still visible. The period of Old English begins in 449 and ends approximately in the year 1100. Very few written documents of that time were preserved, however, it is clear that the language was constantly changing and evolving (Bryant 34). Old English was influenced by Celtic, Latin and Scandinavian.

The Period of Middle English lasted roughly from 1100 till 1500. After the Norman Conquest the main influence on the language was Norman French. It became the official language of monasteries and churches, law, business and education, while English was left on the periphery (Bryant 58). The reestablishment of English began in 1356 when the mayor of London instructed that court proceedings must be held in English. This process of bringing English back from oblivion lasted for more than one hundred years. During the period of Middle English, the language lost most its inflections and became an analytical language. Grammatical gender was replaced by natural gender, the fixed word order of English as we know it emerged. Thousands of words of French and Latin origin had enriched the word stock (Bryant 63).

The period of Modern English began around the year 1500. The so-called Early Modern English period lasted from 1500 till 1700 and was greatly influenced by the Renaissance. English was affected by Greek and Latin as a result of it (Bryant 82). During this period, thanks to the printing press, books in English became widespread. With time English replaced Latin as the language of education. Apart from Greek and Latin, loan words from countless languages such as Spanish, French or Italian were adopted. Modern English, with its slow changes, has been called a “period of regularization and standardization” (Bryant 8).

English is one of the most used languages around the globe with millions of speakers. Nowadays, non-native speakers of English greatly outnumber people with English as their mother tongue, making it a major Lingua Franca and the most widespread language in the world. Modern English is undoubtedly the language of commerce, business, education and entertainment around the world.

English, as any world language, has a great deal of dialects, accents and variations, such as American, Canadian, Irish or Scottish English. The thesis concentrates on British English, specifically on Received Pronunciation (RP), the accent used by most textbooks, dictionaries and academic papers (Roach 4).

3.1 Sound system of English

English, unlike Arabic, is an example of a language that does not have a one-to-one correspondence between a grapheme and a phoneme. It is one of the main reasons why English spelling and pronunciation seem to pose great difficulties to students.

English has 20 vocalic sounds, 11 pure vowels and 8 diphthongs. According to vowel length RP distinguishes seven short vowels, such as, /ʌ/, /ə/, /æ/, /ɪ/, /e/, /ɒ/, /u/, including the most common English vowel schwa /ə/ and five long vowels /ɑ:/, /ɛ:/, /ɪ:/, /ɔ:/ and /u:/ These two groups of vowels should not be viewed and examined as each others counterparts. In fact, the whole concept of vowel length is relative, as those vowels are only short or long in comparison with each other. In speech, vowel length, to a great degree, depends on a context (Roach 14).

Eight diphthongs in the English Language could be classified into two groups, specifically centering /eə/, /ɪə/, /uə/ and closing /ɔɪ/, /ɑɪ/, /au/, /eɪ/ and /əu/. The one important thing that should be mentioned about English diphthongs is that unlike in Spanish the first part of a diphthong is much longer and stronger than the second one. The second segment holds only about ¼ of the length of a diphthong (Roach 20).

The most elaborate vocalic sounds in the English Language are triphthongs. Even though they sometimes pose problems to students in pronunciation, especially to the students whose native languages have less elaborate vocalic systems, their composition is quite simple; triphthongs are closing diphthongs with an added schwa (Roach 23).

English has quite a rich and varied consonantal system. English consonants are generally classified according to their manner and/or place of articulation. Based on the manner of articulation, consonants could be derived into several categories, such as plosives, e.g. /p, t, k, g, d, b/, fricatives, e.g. /f, v, s, z, ʃ, ʒ, θ, ð/ , affricates, e.g. /ʧ, ʤ/, nasals /m, n, ŋ/, lateral /l/,

approximant /r/ and a distinct group, which is generally described as semivowels, which consists of /j/ and /w/. According to Roach (61), in terms of auditory perception semivowels are much closer to vowels than consonants, however, phonologically they behave like consonants.

3.2 Syllable structure of English

Syllable is a language entity, which helps us to research and investigate words as breakable, theoretical units. English syllable structure consists of one necessary element, the center of the syllable, or the peak. The peaks are generally classified as having little or no obsruction to the air stream. In English peaks are usually occupied by vowels (V), for example in the word *or* /ɔ:/, however, unlike in Spanish, in English we could find so-called syllabic consonants, in other words consonants that could occupy the center of a syllable. For example /l/ in the word *bottle* or /n/ in the word *wooden* (Roach, 78).

The preceding element of the peak is onset. Onsets are occupied by consonants (C) and are not, unlike in Arabic, an obligatory part of an English syllable. The element, which follows the peak is called a coda. Codas in English are always filled up by consonantal sounds. Peaks and codas participate in the creation of rhyme. Syllables, which contain codas are called closed (CVC), those who do not, open (CV).In English, no more than three consonants can appear in an onset and no more than four in a coda, which means that the utmost structure of an English syllable is CCCVCCCC.

The number of consonant clusters in onsets is quite limited. Roach describes two possible consonant clusters in onsets as a pre-initial /s/ + initial /p, t, k, f, m, n, l, w, j/ or a number of initial consonants, such as, /p, t, k, b, d/ + post-initial consonants /l, r, w, j/, in various combinations .The only three-consonant clusters that could appear in English onsets are /spl, spr, spj, str, stj, skl, skr, skw, skj/ (Roach 71).

Up to four consonants can appear in a coda. Any consonantal sound, except /h, r, w, j/, could fill up the position. Roach classifies final two-consonant clusters into two groups, the first one being a pre-final consonant, such as, /m, n, l, s, ŋ/ followed by a final consonant and the second one, which presents a final consonant followed by a post-final consonant, such as, /s, z, t, d, θ/ (71). Roach uses a quite similar classification for thee-consonant coda clusters, which could be arranged into two categories. Namely, the clusters consisting of pre-final, final and post-final consonants, such as /lpt, ndz, lfθ, ŋks/, and those consisting of final and two post-final consonants, such as /kst, pst, fθs/. The majority of four-consonant clusters have a pattern of a pre-final, final and two post-final consonants, e.g. /mpts, lfθs/, although some could be classified as having one final and three post-final consonants, such as /ksts, ksθs/ (72).

4 Comparison of Arabic, Spanish and English syllable structures

Since the topic of the paper, vowel epenthesis, is heavily dependent on syllable structures and the rules of phonotactics, it is crucial to understand the differences and similarities that could be found between the three languages.

English has the most elaborate syllable structure of the three. As mentioned above, the rules of English phonotactics allows up to three consonants to appear in an onset and up to four consonants to appear in a coda (CCCVCCCC). Syllable structures of Spanish and Arabic are less complex, with Spanish utmost syllable structure being CCVCC, while in Arabic maximum of one consonant may appear in an onset and maximum of two in a coda, resulting in the structure CVVCC. It is also worth mentioning, that whilst in both English and Spanish, the nucleus is the only obligatory part of a syllable, in Arabic both the nucleus and the coda must be present in all syllables.

As a result of the differences in syllable structures, pronunciation mistakes are expected to occur amongst native Arabic and Spanish speakers studying English. Both of the languages do not allow three or four consonantal clusters to appear in the same syllable. Arabic speakers should anticipate facing problems with onsets consisting of more than one consonant and codas of more than two. Across syllabic boundaries, three or more consonantal clusters are expected to be the cause of pronunciation difficulties for Arabic speakers.

Spanish speakers are likely to make mistakes in syllables with onsets and codas composed of more than two consonants. Moreover, Spanish phonotactics limits CCC clusters created across syllabic boundaries to /ntr, mbr, str, mpr/, while the only CCCC clusters allowed to appear together across syllabic boundaries are /kstr, kspl, nstr, kspr/. As are result, Spanish speakers faced with words consisting of any other CCC or CCCC clusters might experience complications in pronunciation.

5 Second language acquisition and negative transfer

The process of learning and acquiring any new information is constructed on the foundation of already existing knowledge. The same principle applies to the process of learning a foreign language. When a student tries to learn a second language, the only way to make sense of it would be to compare it to his or her mother tongue. The majority of linguists agree that the less experience you have with a target language, the more you rely on your first language. As a

student progresses in his or her studies, the need to constantly use and apply his/her mother tongue to resolve linguistic problems ceases (Hakan 1).

While linguists are predominantly concerned with the differences between L1 and L2, which could be analyzed, students are mostly interested in similarities that they could find between their L1 and second language (L2), which would help them in their studies. Even though mother tongue is one of the main sources of cross-linguistic similarities, it is not the only one. According to different studies, if the TL is not the first foreign language a student has studied, he or she tend to rely more on their second language, than the first (Hakan 2). Provided, of course, that the L2 is more similar to the TL than L1.

According to Hakan, there are three types of cross-linguistic relations specifically, a similarity relation, a contrast relation and a zero relation. An example of similarity relation would be the noun morphology of Swedish for English speaking learners. Germanic and Romance languages are an example of a contrast relation, while Chinese and English could pose as an example of zero relations, which means that the differences between the two languages are so vast that there is no linguistic overlap. Students who experience zero relation in their language studies tend to spend much longer trying to comprehend how the TL works (6).

To answer the question why students make mistakes in pronunciation, it is necessary to take a look at negative transfer. It is one of the major factors influencing the speech of all learners of foreign languages. The idea would be, that the interference of a student's mother tongue distorts the pronunciation of a second language.

The theory developed in the first half of the twentieth century, when Trubetzkoy and Polivanov explored and described their claim, which stated that difficulties in a L2 pronunciation are the direct result of the influence of a L1. Trubezkoy was also one of the first to suggest that the root of pronunciation difficulties lies in the incorrect perception of a TL. In the second half of the twentieth century the emphasis shifted, the majority of research focused on the production of sounds. However, in recent papers phonologists have returned to the idea that perception leads to production and, therefore, must be viewed as one of the main reasons for L2 pronunciation problems. According to Barry (1989) and Grasseger (1991) students who showed no major difficulties in perception of L2 sounds easily and accurately managed to produce the aforementioned sounds (Escudero 109).

The Contrastive Analysis Hypothesis (CAH) was developed in the mid 20th century and claimed that negative, as well as positive, transfers could be fully predicted by the meticulous study of differences and similarities between a first language (L1) and a target language (TL) (Yi 2372).

It must be mentioned that not all mistakes students make are rooted in linguistic differences. Other factors include a student‘s attitude and motivation, as well as various psychological and sociolinguistic factors which are not mentioned in this thesis (Yi 2373).

Concerning the influence of age on a student’s ability to acquire a L2, most studies agree that the older the student gets, the harder it is to learn a new language. According to Lennenberg, it is close to impossible to achieve native-like level in a TL after puberty due to the loss of plasticity of the brain (Derakhshan and Karimi 2113).

6 The phenomenon of epenthesis

Penny describes epenthesis as the insertion of an extra phoneme in order to help and make the transition from one phoneme to another easier (36). Vowel epenthesis mainly serves as a tool for breaking up illegal consonant clusters. However, in some languages, specifically in those that do not permit the use of monosyllabic words, it might be used in order to bring a word to its intended two syllabic or two moraic shapes (Hall, *Vowel* 1577).

The thesis concentrates mainly on vocalic epenthetic sounds. However,even though vowel epenthesis is more common, consonantal sounds are also frequently used in this function, as illustrated by Penny in the following examples. These examples show the historical transition of some Spanish words, such as *humeru=hom**b**ro*, *ingenerare=engen**d**rar*. Extra consonants /b/ and /d/ aid the shift from the nasal to /r/ (36).

Arabic speakers also commonly use consonantal epenthesis, specifically in order to repair illegal onset combinations. It has already been mentioned that Arabic allows only one onset structure CV. As a result any loanword beginning with a vowel undergoes the aforementioned process. The practice is described by Jarrah in his study of English loanwords pronounciation by Madinah Hijazi Arabic (MHA) speakers. The study clearly indicates the tendency to apply consonantal epenthesis in cases of loanwords beginning with a vowel, which violates Arabic rules of phonotactics, e.g. *ice-cream* – [ʔiskiri:m], *express* – [ʔiksibris] or *exam* – [ʔikza:m]. As we can see, glottal stop is the epenthetic vowel of choice in onsets in the speech of MHA natives (73).

6.1 The role of markedness in epenthesis

While negative transfer is still considered to be the main source of pronunciation mistakes, amongst interlanguage phonologists more recent studies have shed some light on the role of markedness (Alezetes, 2). Markedness Differential Hypothesis (MDH) not only looks at differences between phonological structures of two languages, it also takes into consideration the

degree of markedness. According to MDH, complex onsets and codas are marked. In cases when a student's native language does not allow complex syllable margins, the pronunciation mistakes are expected to occur. However, if a student's L1 phontactical system features complex combinations, while TL prohibits them, the mistakes in pronunciation are usually non-existent. Hence, unmarked forms of a TL are easier to acquire than the marked ones, regardless of their existence in the mother tongue of a student. MDH claims that transfer alone is insufficient and fails to fully explain the occurrence of pronunciation mistakes, as well as the occurrence of epenthetic sounds (Alezetes 4). occurence

Carlisle, in his paper, refers to the approach as The Interlingual Markedness Hypothesis and studies it in relation to Spanish/English interlanguage phonology. In his paper Carlisle tries to prove that when the structures in the TL, which are in a markedness relationship, differ from the structures in L1, more marked structures are harder to acquire and more prone to modification(5). This hypothesis is proved by the experiment conducted by Carlisle during which native Spanish speakers were asked to pronounce English words beginning with consonant clusters /sm/, /sn/ and /sl/, all of which are illegal in Spanish. From the position of markedness, the combination of /sl/, is less marked than obstruent+nasal combinations, such as /sm/ and /sn/. The experiment concluded that the /sl/ cluster is less frequently influenced by epenthesis than /sn/ or /sm/ (*Effect* 8).

The same markedness approach is used by Carlisle in his study of complex syllable margins, namely onsets. It is universally accepted, and proved by multiple studies, that the longer the margins, the more marked they are (*Modification* 329). According to the Optimality Theory (OT), CV is the universally accepted unmarked syllable structure (Jarrah 68). The theory was proved when the recordings of Spanish native speakers demonstrated that the use of epenthesis before sC clusters is significantly lower than the use of epenthesis before Scc clusters (343). The claim is further proved by various experiments, including one by Anderson, in which native Arabic speakers modified, by using epenthesis or deletion, "2% of 1-member codas, but over 17.4% of 2-member codas and over 30% of 3-member codas"(Carlisle, *Modification* 333).

6.2 The quality of epenthetic vowels

When talking about the quality of epenthetic vowels, it is crucial to mention how, and if, they differ from regular lexical vowels. As schwa is the most commonly used lexical and epenthetic vowel in the English language, multiple studies on its quality and similarities have emerged. In her paper Hall presents us with several studies, one of which is by Davidson and Stone, according to whom, during the production of lexical /ə/ and epenthetic /ə/ the difference in the

position of the tongue could be noticed. The theory is supported by the study of Smorodinsky, who has also detected the difference in tongue position during the pronunciation of the epenthetic schwa in the word *cheated* - /ʧi:təd/ and lexical one in *cheetah'd* - /ʧi:təd/ (Hall, *Vowel* 1583).

The study of epenthetic /i/ in Lebanese Arabic, conducted by Gouskova and Hall, has concluded that in contrast to the lexical /i/, the epenthetic one is relatively shorter and articulately moved back (Hall, *Vowel* 1582). Despite those, and many other studies confirming the existing difference between a lexical and epenthetic vowel, it would be premature to confidently state that this is the case in all languages for several reasons, namely the existence of multiple studies, which disprove this theory and describe epenthetic and lexical vowels as virtually the same (Hall, *Vowel* 1583).

6.3 The choice of an epenthetic vowel in Spanish

While examining the phenomenon of vowel epenthesis, one question might come up, namely, the question of why specifically these vowels are chosen as epenthetic.Let us take a look at probably the most well-known example of vowel epenthesis in Spanish, specifically, the process of extra vocalic /e/ being added to word initial clusters /sp, sk, st/.

The process of adding an extra vocalic /e/ before sC clusters began in Latin. Nowadays Spanish has no words beginning in sC clusters. It is worth mentioning, that /s/ + glide combinations do not fall under the same rule (Fleischhacker 6). Moreover, all the words borrowed from a foreign language undergo the same process, e.g. *spaghetti – espagueti*, *scanner – escáner* (Eddington 64).

Why is /e/, and not any other Spanish vowel, used? If the main objective of epenthesis is to break up illegal consonant clusters and to help a speaker in pronunciation, any other vowel, such as /a/, /i/, or /u/ would be capable of achieving that. It is hard to believe that it could be random, and, according to some phonologists, it is not.

In her paper Lombardi claims that epenthetic vowels are chosen on the basis of markedness, specifically, that the language chooses the least marked vowel at its disposition (19). The theory is supported by Uffmann, who in his research refers to the least marked vowels as default vowels (*Vowel* 6). That is the reason, why in languages, such as English, which contain schwa /ə/, a low-marked vowel, it is the most frequently used epenthetic sound.

However, in the case of /esp, esk, est/ combinations in Spanish such an explanation does not apply, since /e/ is a marked vowel. Lombardi justifies it by the structure of syllables. According

to the research, in all languages with epenthetic /e/, including Spanish, the vowel appears only in closed syllables (Lombardi 25).

While Lombardi's theory sounds convincing in the realm of languages with schwa as a low-marked epenthetic vowel, the view she presents on Spanish /e/ epenthesis is at least incomplete. Eddington presents another hypothesis on this topic. According to his research, the vowel /e/ is chosen as an epenthetic sound in sC initial clusters on the basis of frequency. First of all, /e/ is the most commonly occurring vowel in the Spanish language, regardless of its position. Moreover, the combination of esC in Modern Spanish (MS) appears as much as six times more often that the combinations of usC, isC, asC or osC counted together (65).

6.4 The choice of an epenthetic vowel in Arabic

Farweneh approaches the question of epenthetic vowel distribution in Arabic. According to her studies non-low epenthetic vowels, such as /i/ or /ə/ are much more commonly used and could occur in all kinds of syllables and the majority of dialects, including coda dialects, e.g. [himl.na] – [hím**i**lna], which stands for *our load*, as well as onset ones, e.g. [himl.na] – [himl**í**na]. Meanwhile low epenthetic vowels are preferred only by two dialects of Arabic, Saudi and Sudanese. Moreover, in Saudi low epenthetic /a/ is used to break up medial consonantal clusters, while /i/ is used to resolve word-final consonantal combinations (101). Regardless of the choice between /i/ and /a/, in accordance with Farweneh study, the choice is made on the basis of the final syllabic consonant, or its absence. While in coda dialects, where final C is a must, the epenthetic vowel of choice is generally /i/ (CiC), in onset dialects; in cases of open syllables in which epenthetic vowel takes the place of syllable nucleus, the choice falls on low /a/ (Ca) (104).

6.5 The placement of epenthetic vowels in Spanish

It is worth mentioning that there are no universal rules on the placement of epenthetic sounds. Every language determines it in accordance with its phonotactics constraints and differences occur even between different dialects of the same language.

Let us come back to the discussion of initial /e/ epenthesis before sC clusters in Spanish. If the only goal of epenthetic vowels is to break up consonantal clusters, what is the reason for its placement at the beginning of a word, before /s/? The insertion of /e/ in between the consonants would also resolve illegal combinations. However, such cases do not occur frequently. Eddington states that the reason behind it is frequency. According to his research, the combination of esC in Modern Spanish (MS) occurs around three times more often that seC (66).

Concerning the occurrence of sC clusters in medial position, the combinations are not illegal. However, according to the rules of syllabification consonants must never appear in the same syllable, as shown in the word *perspectiva* - /per**s**.pec.ti.va/ (Baker 2).

The frequency of inserting epenthetic /e/ before illegal /sC/ combinations is wholly dependent on phonetic environment and surroundings of the clusters. The less sonorous the preceding sound is, the more likely it is for epenthesis to occur (Carlisle, *Effect* 6). For example, in the sentence *The street is crowded*, the chances of epenthesis to appear before the /st/ combination are lower than in the sentence *Port station is close to the city center.* Simply stated, epenthetic sounds appear more frequently after consonantal sounds than after vocalic sounds. The influence of the linguistic environment is so vast, that, according to Carlisle, it overpowers the factor of markedness (*Modification* 351).

Let us take a closer look on how final consonantal endings in Spanish have been altered by epenthesis. While Old Spanish tolerated words ending with a single consonant, in Modern Spanish (MS) the majority of them underwent the process of adding extravocalic /e/ at the end of a word. However, words ending in liquids, /s/ or /n/ do not follow the same pattern. Furthermore, not all word endings were changed by the aforementioned process. For example, final approximant /r/ is very common in MS, since all infinitive forms of verbs end with a V/r/ structure. Words ending in lateral /l/ are also quite frequent in MS, as illustrated in Table 2 (Proctor 53). The epenthesis in this case could be explained as the desire to create open syllables, since word final consonants in Spanish are considered to be marked (Baker 1).

Table 2

The addition of vocalic /e/ to consonantal endings in Spanish

Old Spanish	**Modern Spanish**	**Translation**
princip	principe	prince
puent	puente	bridge
noch	noche	night
cruel	cruel	cruel
mar	mar	sea

Source: Proctor, M. Gestural *Characterization of a Phonological Class: the Liquids*. A Dissertation Presented to the Faculty of the Graduate School of Yale University in Candidacy for the Degree of Doctor of Philosophy, 2009. Web. 1 November 2016.

6.6 The placement of epenthetic vowels in Arabic

While all Arabic dialects agree on the use of epenthesis as a way of breaking up consonant clusters, they disagree on the place of insertion. North African dialects are part of so-called coda dialects, and prefer to place the epenthetic vowel before the second consonant (CvCC). Others, like Egyptian or Saudi, which are part of so-called onset dialects prefer to place the epenthetic vowel after the second consonant (CCvC) (Farweneh 83).

Broselow, who puts emphasis on the way initial CCC clusters are resolved by Iraqi and Egyptian speakers, further develops the claim. While Iraqi learners adhere to the rule of epenthesis and place an extra vowel between unsyllabified consonants, e.g. *street* – [s**i**trit], *square* – [s**i**kwer], speakers of Egyptian region insert an epenthetic vowel before the cluster and in between the second and third consonant: *streer* – [**i**stirit]. The difference is attributed to the fact that the patterns of /s/ + stops /p, t, k/ do not comply with the regular error patterns in Arabic. That is the reason why a vowel is placed before /sp, sk, st/ clusters, as in the word *study* – [**i**stʌdi], but between two consonants in clusters consisting of /s/ plus any other consonant but stop, as in the word *sweater* – [s**i**wetʌr] (80).

According to Broselow, s-stop clusters are treated differently because they violate the universal principle of Sonority Sequencing, which declares that the most sonorous element, a vowel, is placed in the middle and the rest of the elements are situated "in order of decreasing sonority as they approach the margins of the syllable" (82). Fricatives are more sonorous than stops, hence /st, sk, sp/ do not adhere to the principle. The theory is plausible; however, Tamimi and Shboul, who, in their study, research CC coda clusters in Modern Standard Arabic (MSA) and their adherence to the Sonority Sequencing Principle (SSP), question it. After thorough investigation, the linguists conclude that only 42% of all CC coda clusters comply with the SSP (32), raising the question of the real power and influence of SSP on phonotactics and placement of epenthetic vowels.

The similar approach is taken in the use of epenthesis in initial CCV clusters in borrowed words. While onset dialects insert a vowel after the first consonantal sound Cv.CV, e.g. *sweater* – [s**i**weter], in coda dialects an epenthetic vowel is placed before the first consonant vC.CV, e.g. [**i**sweter]. It is the basis of contrast between different Arabic learners of English as a second language. While a student from Egypt will pronounce the word *floor* as [f**i**lɔ:r], an Iraqi student

is more likely to pronouns it as [ʔ**i**flɔ:r] (Farweneh 86). The addition of glottal stop is necessary, since no syllable in Arabic can start with a vowel, and, in this case, epenthetic /i/ violates that particular rule of phonotactics. Broselow further proves this study when she comes to similar conclusions (74).

Perception is also taken into account as one of the forces influencing the decision behind epenthetic vowel placement. While in words like: *study* – [**i**stʌdi] or *ski* – [**i**ski] the epenthetic vowel is placed before the first consonant, in words like *sweater* [s**i**wetʌr] or *slide* [s**i**lɑɪd] the clusters are resolved by the insertion of the vowel in between the consonants. This decision is justified by Fleischhacker as an attempt to cause the least amount of damage to the original word. According to the perceptional experiment, performed with the participation of native English speakers, the clusters consisting of a sibilant and stop /sp/, as in the word *spar*, are perceived to be more recognizable if an epenthetic vowel is placed before the first consonant [**ə**spɑ:r] than after [s**ə**pɑ:r]. Quite the opposite is reported to happen in clusters of an obstruent and sonorant, such as /fl/ in the word *flit*. Native speakers believe that the insertion of an epenthetic vowel in between the consonants [f**ə**lɪt] is less destructive to the structure of a word than the placement of a vowel in the initial position [**ə**flɪt]. The process is specific to the loanword epenthesis (*Vowel* 1592).

Fleischhacker further develops Hall's study on the place of insertion of epenthetic vowels in loanwords and interlanguage. His paper comes to similar conclusions, namely that in CC clusters, the vowel is placed before the first element if the combination of a sibilant and a stop, but in between of obstruent and a sonorant. The initial vowel epenthesis is referred to as prothesis, while breaking up clusters in the middle is referred to as anaptyxis. Egyptian Arabic is used as one of the examples in order to prove the theory, e.g. *study* – [**i**stadi] (ST) or *plastic* – [b**i**lastic] (OR). A variety of other languages, such as Bengali or Turkish, follow the same rule (2).

Farweneh also presents a syllable structure of both onset and coda dialects. According to her, two main ideas emerge. The first idea, proposed by McCarthy and Prince, claims that all syllables in coda dialects must end with a consonant, while onset dialects prioritize open syllables CV. As a result, all phonological processes, including epenthesis, act in line with this rule. Next, Farweneh cites the proposal by Broselow, who puts emphasis not on the coda, but on the size of a syllable, claiming that bimoraic syllables, such as CVV and CVC, are favored over trimoraic syllables, CVVC, CVCC. As a result, phonological processes, including epenthesis, act in order to support bimoraic syllables (Farweneh 88).

It is also worth mentioning that in the majority of Arabic dialects, epenthesis is used across word boundaries in order to break up clusters consisting of more than two consonants. As shown in the following example /bint blaad/ - [bin.**ti**b.laad] - *hometown girl,* the process of resyllabification is followed by the insertion of an epenthetic /i/ (Mahfoudhi 31).

6.7 Epenthetic vowels vs. Intrusive vowels

It has already been mentioned that epenthetic vowels are chosen on the basis of markedness. The theory is further proven by the study of Arabic syllables and word stress by Watson, according to whom, in certain dialects, epenthetic vowels are not only always unstressed; they are virtually ignored by the stress. This means that epenthetic vowels are not taken into consideration during stress placement. This type of epenthesis is generally referred to as postlexical epenthesis (*Word* 23). However, in other dialects, epenthetic vowels are taken into account during all lexical processes (Kiparsky). This type is referred to as lexical epenthesis. The theory is further developed by Hall, who also adds that in certain languages and dialects, epenthetic vowels and specifically syllables, containing epenthetic vowels, could be treated as fully-developed syllables in some phonological aspects, such as stress, while ignoring the others, such as lengthening of stressed syllables (*Vowel* 1587).

The theory is further developed by Hall, who differentiates between epenthetic sounds, which, according to her, are able to act a as syllable nuclei, and intrusive vowels, which are not. Basically, in the case of intrusive vowels no vowel segment is being added, intrusive vowels result in the creation of "acoustically vocalic period", which is not a phonological element, hence, no new syllable is formed (*Cross-linguistic* 37). In the study Hall lists the main differences between epenthetic and intrusive vowels, the most important of which are the optional character of intrusive vowels and their likely disappearance in faster speech, as well as their lack of repairing function. One of the main goals for inserting epenthetic vowels is to repair marked illegal combinations of consonants. It is also worth mentioning that the quality of an intrusive vowel is either schwa or a copy of a nearby vowel. As an example, Chilean Spanish could be studied: *ing**a**latera - 'England* (*Cross-linguistic* 31). While amongst epenthetic vowels there is more diversity and such a vowel may be independent of its surroundings (*Cross-linguistic* 2).

According to Hall, the motivation behind using intrusive and epenthetic vowels could also be different. Based on her research, one of the main reasons for insertion of intrusive vowels is to better the perception. For example, in Spanish, intrusive vowels provide better accosting environment for the correct perception of taps and flaps (*Cross-linguistic* 21).

6.8 Epenthesis in loanwords vs. Epenthesis in native language

Another source of conflict among phonologists is the way epenthesis is studied in loanwords and in a native language. While some linguists see close relation between the two and prefer to study and review them simultaneously, others, like Hall, believe such an approach would be misleading, since, based on new evidence, epenthesis in loanwords might happen for completely different reasons, and serve other purposes than the native-language process.(*Vowel* 1588).

Hall also claims that unlike language-internal epenthesis, loanword epenthesis is more unpredictable and, in certain languages, might even be optional. There are more exceptions to the rules of loanword epenthesis and one of the reasons for that might be limited data on the topic (*Vowel* 1591).

Since Arabic is the focus of the paper, it is used as an exemplification. The way medial CCC clusters are resolved in native language of Egyptian and Iraqi dialects of Arabic completely mirrors the way those clusters are broken up in L2, as illustrated in table 3.

Table 3

Epenthesis in native language and interlanguage phonology of Iraqi and Egyptian dialects of Arabic

		Iraqi	**Egyptian**
native language	*/kitab+t+l+V/*	*ki.ta.b**i**t.la*	*ki.tab.t**i**.lu*
interlanguage	*children*	*chil**i**dren*	*child**i**ren*

Source: Hall, Nancy. *Vowel Epenthesis*. n.d. Web. 4 June 2016, 1592

6.9 The role of perception in epenthesis

The newer studies support the theory that perception is the root of epenthesis. According to Hall, consonants surrounded by vowels are more easily perceived than the ones enveloped in consonants (*Vowel* 1577).

In her paper Hall describes perceptual experiments conducted by Dupoux, who claims that when native speakers of French and Japanese were asked to confirm or deny if in a nonsense word /ebzo/ contains a medial vowel /ɯ/ (*Vowel* 1589), a commonly used epenthetic vowel in Japanese loanwords from English. The majority of Japanese speakers stated that they have heard the vowel, while the majority of French speakers did not (1589). Various phonologists, such as, Uffmann, declare that the role of perception in loanword epenthesis is very slight, negate the claim and state that the process is mainly driven by phonological reasons (*Epenthetic* 1105). The newest studies on negative transfer in phonology try to focus on both phonetical and phonological aspects of a language and their influence on pronunciation mistakes (Rose and Demuth 1113).

The study by Gibson further proves that perception plays a major role in the process of epenthesis. During a series of experiments on perception of /sC/ clusters in Spanish, children with Spanish as L1 have repeatedly claimed hearing a non-existent prothetic /e/ before /sC/ non-native consonantal clusters (35). This fact completely disrupts previous claims on how /esC/ epenthesis is rooted in production only.

Very few studies have examined the perception of epenthetic vowels by native speakers and the results vary. While in some languages speakers do not consider epenthetic vowel to be a part of a syllable structure, in other languages speakers are very much aware of them (Hall, *Vowel* 1584).

The position of perception in epenthesis is further strengthened by Davidson's study, during which native English speakers were asked to produce words with illegal consonantal combinations. The study concluded that the sequences of voiced consonant clusters, such as /vn/ or /vz/, are more prone to be influenced by epenthesis than the voiceless ones, such as /kt/, /pt/. Since epenthetic vowels are by definition voiced, the results of the experiment could be acoustically motivated. The placement of a voiced vowel in between the voiced clusters is less disruptive to the ear (Fleischhacker 16).

7 English as a lingua franca

It has already been mentioned that English is the most widespread language in the world. The peculiarity of it is that native speakers (NS) are greatly exceeded by people who have acquired English as a second (L2) or even third language (L3). This chapter focuses on the language used by the non-native speaking majority, which is referred to as English as a Lingua Franca (ELF).

As the language developed and became more and more common, ELF has become a major topic of conversation amongst linguists. The majority of linguists agree that it is, in fact, different than the language used solely by NS and therefore deserves attention in the field of applied linguistics.

7.1 Lingua franca core

The breakthrough in the study of ELF came at the beginning of the 21st century, when Jennifer Jenkins first proposed a list of linguistic features which are vital for the communication and correct comprehension among non-native speakers (NNS) of English. Jenkins referred to this as Lingua Franca Core (LFC) (Zoghbor 285). LFC is a requirement in achieving international intelligibility in speech.

7.1.1 Epenthesis vs. Deletion

The part of LFC that is of interest to us is solution of consonant clusters (Walker). LFC could answer the question that might trouble many students. Namely, if the main goal of loanword and L2 epenthesis is to resolve illegal consonant clusters which do not exist in L1 of a student, why is epenthesis preferred over deletion?

Based on multiple studies, specifically those by Uffmann, epenthesis is favored as a tool for resolving clusters in loanwords, while the deletion of consonants is a marginal case. One of the main goals of communication is the exchange of information, which could be achieved only if both sides understand each other. According to some observations, deletion leads to greater misunderstandings among L2 speakers than the insertion of extra vocalic sounds, hence the attempts to preserve the structures as much as possible (*Vowel* 2). In this case vowel epenthesis is the lesser of two evils.

The idea is further developed by Fleischhacker. According to him, all epenthetic vowels, in loanwords or interlanguage, are placed exactly where they would cause the least amount of

auditory obstruction. Hence an epenthetic vowel is generally placed in between of obstruent and sonorant, but before the cluster consisting of a sibilant and stop (14).

Jenkins further claims that full and correct articulation of consonant clusters in initial and medial positions is crucial for intelligibility, while incorrect articulation of final clusters does not have such a negative effect on comprehension among NNS. The statement is supported by Walker and Deterding, both of whom agree that elision of consonants in codas, specifically those consisting of three consonants, have a slight effect on intelligibility, or non at all (O'Neal 618).

The importance of studying ELF and EFL separately is further amplified by the fact that consonant clusters in native language (NL) and second language (L2) are resolved differently. Native phonology prefers deletion to epenthesis. According to Hall, Japanese medial CC clusters would be simplified by deletion in native phonology, while the same consonant clusters in loanwords would be resolved with the insertion of epenthetic vowels (*Vowel* 1590). The tendency to use deletion in native phonology could be explained by the fact that intelligibility of NS is much higher than that of NNS, and therefore the chances of mutual misinterpretation are lower by a considerable amount.

Practical Part

Recordings of native Spanish and Arabic speakers were obtained and enquired into in order to examine the use of epenthesis, which speakers turn to while dealing with consonantal clusters, which are prohibited by their mother tongues, as well as to detect which consonantal clusters are more prone to being influenced by the phenomenon.

The aim of the work was not only to discover which clusters are resolved by epenthetic vowels, but also to examine the quality of said vowels. Another goal of the research is to explore how the phonetic environment affects the use and quality of epenthetic sounds, as well as to observe the use of deletion versus the use of epenthesis by native speakers. Based on the comparative analysis of the examined languages and the current research findings, the following hypotheses were formulated:

Arabic elementary speakers will produce epenthesis in complex initial clusters consisting of more than one consonant and final complex clusters consisting of more than two consonants.

Arabic speakers of onset dialects, which include speakers from Saudi Arabia and Egypt, will resolve CC onset clusters by inserting an epenthetic vowel in-between the first and second consonant - CvC and CCC onset clusters by inserting and epenthetic vowel in-between the second and third consonant – CCvC.

Spanish speakers will produce external epenthesis in s/C/ initial onsets.

/S + stop/ initial clusters will be influenced by epenthesis more frequently that /S + lateral/ or /S + semivowel/ clusters by Spanish speakers.

s/C/ clusters will be influenced by external epenthesis more often when a preceding word ends with a consonant or a consonant cluster

Spanish speakers will produce epenthesis in complex onsets and codas consisting of more than two consonants.

Epenthesis will prevail over deletion as a tool of resolving illegal consonant clusters.

8 Method

The native speakers of Arabic and Spanish were asked to make a recording of a prepared text, as well as to fill out a questionnaire, which gave us an opportunity to find out where the respondents came from, for what period of time they had studied English, their age, their knowledge of other foreign languages and the approximate frequency at which the English language is used in their day-to-day lives. (See appendix 3 and 4). The recordings were

thoroughly analyzed and compared in order to locate common pronunciation difficulties as well as common ways of resolving complex consonant clusters.

8.1 Text Design

In order to examine the use of epenthesis by Spanish and Arabic speakers, two separate texts were created so as to be recorded later. (See Appendix 1 and 2). Each text was designed to target the problematic clusters that might be mispronounced by the speakers - in other words, syllables, words and phrases in which the speakers were expected to make mistakes. Each text was created after thorough research of Arabic and Spanish languages, their syllabic structures and rules of phonotactics.

The text intended for Arabic speakers contains 25 words with complex CC onsets, e.g. *Brazil, plants;* three words with complex CCC onsets, e.g. *spring*, as well as 33 words with complex CC codas, e.g. *eggs, let's, helped*, 10 words created by three consonants, e.g. *next, camps,* and 2 words created with final CCCC cluster, e.g. *sixths*.

The text designed for Spanish speakers includes 25 words with complex initial CC onsets, e.g. *start, slim*, 5 initial CCC onsets, e.g. *strong, spring*, as well as 17 words with final CC cluster, e.g. *list, rules* and 12 words with final CCC clusters, e.g. *asked, results*. It must be mentioned that the text specifically focuses on initial *s/C/* clusters, which are famously prohibited in Spanish, e.g. *Spanish, start, school*.

Since phonetic environment and its influence on epenthesis is one of the areas this paper focuses on, the texts were created with the agenda of examining consonant clusters in different phonetical surroundings, e.g. where initial CC clusters are preceded by a vowel in one sentence and by consonant in another, e.g. *i**s pr**etty, t**o Pr**ague* or *stud**y Sp**anish, thi**s sp**aghetti*.

9 Respondents

9.1 Arabic speaking students

Nine native Arabic speakers took part in the survey. In order to correctly interpret the results of the experiment, the respondents must be divided into two groups. The first group consists of five Arabic speakers from Saudi Arabia with elementary level of English, aged 26 to 36. All the students have been studying English for less than two years, with it being their first foreign language. All the students confirmed that they only infrequently use English outside of a classroom, with Arabic being the language they speak at home or/and in a workplace.

The second group consists of four native speakers from Egypt, aged 27 to 38, with pre-intermediate and intermediate levels of English. The main differences between the two groups are not only their origin and the levels of English, but also the fact that all four Egyptian respondents speak at least three languages. Apart form English and Arabic, all of the respondents are fluent in Czech, while one of them, in addition to Arabic, English and Czech has some basic knowledge of Polish and Russian. The speakers have studied English since they were children, but none of them has achieved high level. Two out of four stated that they do not use English at home or in a workplace, while two of the respondents use the language on a regular basis either in home or work environment.

9.2 Spanish speaking students

Eleven native Spanish speakers took part in the survey. The respondents could be divided into two groups. The first group consists of three native speakers from Spain, aged 20 to 28, with pre-intermediate to intermediate levels of English. For two of the respondents English is their second language (L2), while one of them also speaks Portuguese and has an elementary level of Czech.

The second group of students was formed by eight high school students from Mexico, aged 13 to 17. Four of the students have a pre-intermediate level of English, three have an intermediate level and one student has an elementary level of English. The respondents have been studying English for various periods of time, from 1.5 to 10 years. None of the students use the language at home, which indicates that the language is rarely spoken outside of a classroom. It is also their first foreign language, which means their speech is not affected, positively or negatively, by any other languages, but Spanish

10 Procedure

The recordings and questionnaires were obtained over the course of four months. Most of the recordings were acquired remotely; however, some were obtained in person. All students received the same instructions. All respondents were asked to fill in the questionnaire, after which they were asked to read the text once and only after that read it aloud at a natural pace and record it. The recordings of four Arabic speakers from Egypt were gained via email, while the recordings of five respondents form Saudi Arabia were collected in person. The recordings of Spanish students from Mexico were gained with the help of a high school teacher of English, who works in the school. In this particular case, the teacher was the one who got the texts and instructions via e-mail and later on instructed the students and made the recordings. The recordings of two Spanish speakers from Spain were gathered in person, while one respondent

from Spain sent the recording and the filled in questionnaire via email, after receiving proper instructions. Around 80% of the respondents who were asked to contribute to the study responded.

The recordings were analyzed by repeated listening of the whole recordings as well as individual words and even syllables. Firstly the words which were influenced by epenthesis or mispronounced were singled out, after which they were separated into different categories, such as onset epenthesis of initial CC clusters, onset epenthesis of initial CCC clusters, coda epenthesis of final CC clusters, coda epenthesis of final CCC clusters, coda epenthesis of final CCCC clusters, epenthesis of complex medial clusters, clusters resolved by deletion etc. After the initial division the categories were divided into more narrow sections on the basis of consonant quality and their combinations.

The recording were analyzed without help or input from other people. Complicated or debatable cases were sorted out by thorough listening, comparing, and contrasting. The biggest challenge of the analysis was to distinguish the quality of epenthetic vowels, specifically epenthetic vowels /e/ and /ə/ in the speech of Arabic speakers. At times, it was difficult to pinpoint and identify an epenthetic vowel as /e/ or /ə/. Such disputable cases were, as it has been mentioned earlier, resolved by comparing and contrasting them with definite uncontroversial examples.

11 Results

11.1 Arabic speakers

Described below are the results of a survey conducted on five Saudi Arabic speakers. As it had been anticipated, the students struggled with the pronunciation of onsets consisting of more than one consonant, as well as with codas consisting of more than two. What is more, even some CC codas appeared to be problematic for the speakers.

11.1.1 Onsets

A number of CC onsets were included in the text. In most cases, the clusters are resolved by insertion of an epenthetic schwa. The examples and the percentage by which a word is modified are presented below.

Brazil – [bərəzɪl] - 80%

throne – [θərɔ:n] - 60%

ski – [s**ə**ki] - 20%, [s**e**k] - 20%

sweater – [s**ə**wetər] - 20%

grey – [g**ə**reɪ] - 20%

floor – [f**ə**lɔ:r] - 20%

The examples further illustrate the theory of onset and coda dialects, described by Farweneh, according to which, in onset dialects (which include dialects of Saudi Arabia) and in cases of CC onset clusters the epenthetic vowel is placed between the first and second consonant.

What is interesting is that certain words which have CCV onset structure are resolved not by epenthesis, but by shifting of a second consonant towards a coda, e.g. *Brad* – [b**ɑ:**rd] - 60%, *pretty* – [p**e**rti] - 60% or *close* – [k**ɔ:**ls] - 40%. This action could be justified by the speaker's desire to adjust syllable structure of a word towards their mother tongue as much as possible, considering the fact that Arabic onsets are allowed to have only one consonant, while codas could be created by maximum of two. However, it is still unclear why the consonant shift is used in those particular cases while in other words with the same consonant clusters the epenthesis is used or no extra vocalic sound is detected whatsoever, e.g. ***Br**azil* – [**bər**ə'zɪl] - *80%*, ***pr**oblems* – [**pr**ɔ:bələmz] - 0%, ***Pr**ague* – [**pr**ɑ:g] - 0%.

Onsets consisting of three consonants (CCC) had also proved to be problematic for the speakers. However, unlike with CC onsets, CCC ones were often resolved by epenthesis and deletion, e.g. *screaming* – [s**e**rımin], [s**e**rmınin] - the insertion of /e/ as well as deletion of /k/ were opted by 60% of the respondents. The word *street* – [s**e**tər], was modified by two epenthetic vowels and the deletion of final consonant by 20% of respondents. The word *square* was adjusted differently by two different speakers. While in one case the epenthetic /e/ was inserted after the second consonant [sk**e**w**ə**r] and stressed, in another, the epenthetic schwa was placed after the first consonant, while the second consonant was deleted altogether – [s**ə**ker].

11.1.2 Codas

Despite the fact, that CC codas are allowed by the rules of phonotactics in Modern Standard Arabic (MSA), as well as by dialects of Peninsula, which include Saudi Arabia, some CC clusters at the end of words were modified by speakers.

needs – [ni:d**ə**z] - 20%

six – [sık**ə**s] - 20%

questions – [kwestən**ə**z] - 20%

lived – [laɪv**i**d] - 20%

comes – [kɔ:m**ə**z], [kɑ:m**ə**z] - 40%

Mark – [mʌr**i**k] - 20%

CC coda clusters were mispronounced by a small number of respondents. The majority of students faced no problems regarding these examples.

Codas consisting of CCC clusters proved to be much more challenging for the students. The peculiar thing is, that although it is claimed that the speakers of onset dialects, which include dialects of Saudi Arabia are bound to place an epenthetic vowel in between the second and third consonants (CCvC), in two examples of CCC clusters the epenthetic sound was placed after the first consonant (CvCC), e.g *next* – [nek**ə**st], *plants* – [plen**ə**ts]. However, one may view these as exceptions, since the rest of the words with complex three consonantal clusters were resolved by an insertion of a vocalic sound after the second consonant. The examples are presented below.

asked – [ɑ:sk**i**d] - 60%

helped – [help**e**d] - 60%,

camps – [kɑ:mp**ə**s] - 40%

worked – [wɔ:rk**i**d] - 60%

birds – [bɛ:rd**e**z] - 20%

plants – [plent**i**s] - 20%

wants – [wɔ:nt**ə**s] - 20%, [wɔ:nt**i**s] - 20%

ends – [end**ə**z] - 40%

words – [wɔ:rd**ə**z] - 20%

As evident, the word *plants* is pronounced by different speakers not only with different epenthetic vowels, but also varying the place of insertion of these vowels.

Examples of consonant shift were found amongst CCC coda clusters. The most prominent example is the word *birds*. While only 20% of students used an epenthetic vowel to break up the consonantal cluster, 60% of respondents pronounced it as [brɑ:dz], [bredz] or [brɪdz], thus solving the coda cluster while at the same time creating an onset one. The phenomenon is also evident in words *helped* – [hep**e**ld] and *worked* – [wɔ:k**e**rd]. In both of these cases the first consonant of CCC cluster is moved to the second place. The reason for such action is not completely clear.

Codas made of CCCC situated at the end of a word were resolved by the speaker with epenthesis and/or deletion, e.g. *instincts* – [ɪn.sins], [ɪn.siŋkt], [ɪn.stiŋktis], [ɪn.əstins], *five-sixths* – [faɪvsɪkəθis], [faɪvsɪksθəs], [faɪvsɪks] or *changed* as [ʃendʒid] or [ʃenʒed].

It might be important to separately describe words ending in CC cluster /ts/. In the majority of cases the respondents changed the order of the two consonants, thus ending words with /st/, e.g. the word *let's* was pronounced as [lest] or [lɑ:st] by 60% of the students, the word *sits* as */sɪst/* also by 60%. In the words *boots* – [bɔ:st] and *cats* – [kɑ:st] the order was inverted only in 20% of cases. The reason behind such an adjustment is not quite clear. It might be attributed to the SSP, since /s/ is more sonorous than /t/. However it wouldn't explain why 40% of respondents pronounced the word *lost* as [lots].

The clusters of CC or CCC consonants situated inside a word and across syllabic boundaries are resolved by epenthesis and/or deletion, e.g. *pro**bl**ems* – [prɔ:b.**ə**lemz], *e**x-b**oyfriend* – [eksəbɔɪ.frend], *i**nst**incts* – [ɪn.sɪns] or [ɪn.**ə**stɪns], *sixteen* – [sɪk.**ə**sti:n] or [sɪk.əti:n].

Described above are the main cases of breakage of illegal consonantal clusters by native Arabic speakers from Saudi Arabia. The clusters are mostly resolved by an insertion of an epenthetic vowel. The most common epenthetic vowel of choice amongst the student is schwa or weak /i/. The deletion is also used as a tool to break up clusters, however, this happens far less frequently than epenthesis. Another interesting phenomenon, described above as consonant shift, was also registered. Its roots and causation are to be determined.

This experiment shows that the speakers use epenthesis within syllabic and word boundaries; however no epenthesis across word boundaries is detected. The reason for that might be the pace at which the students read the text. At times, the pauses between words are so vast; there is simply no need to add extravocalic sounds to aid the transitions.

The experiment shows no link between the frequency of insertion of an epenthetic sound and the phonetical surroundings of a word. In some cases complex onsets are resolved by epenthesis when they are preceded by a vowel, e.g. *to ski* – [tu səki:] while in other cases the speakers have no difficulties in producing the cluster, even though it is preceded by a consonant, or even a group of consonants, e.g. *left school* - /left sku:l/. A similar situation is detected in complex codas. The reasons behind that could, again, be the unnaturally slow pace at which the text is read and the lack of linking, as well as the fact that in onset dialects, which include Saudi Arabic dialects, an epenthetic vowel is placed in between the first and second consonants in CC clusters and in between the second and third consonants in CCC clusters. In onset dialects an epenthetic sound never precedes a cluster.

Regarding the four students from Egypt who have also participated in the study, no mistakes have been detected in all four cases. The reason for that might be the level of English that the speakers have, pre-intermediate to intermediate. However, another, even more compelling, reason for the complete lack of mistakes is positive transfer. All four of the speakers are fluent in Czech, in which the rules of phonotactics allow more consonants to appear in a row than both Arabic and English. As a result any clusters, which might be problematic to Arabic speakers with no knowledge of any other foreign languages with more complex phonotactical structures do not pose any difficulties for these particular students.

11.2 Spanish speakers

Described below are the results of a survey conducted on 11 native speakers of Spanish from Spain and Mexico. Unlike in Arabic, a big emphasis is placed on phonetical surroundings and its influence on epenthesis. The area of focus amongst Spanish speakers is complex onsets, specifically s/C/ onsets. However, some cases of codas, specifically grammatical endings will be discussed as well.

11.2.1 Onsets

As anticipated, the speakers struggle with onset clusters consisting of s + /C/. The epenthetic vowel of choice in all such cases is /e/, which is placed before the first consonant, /e/sC.

11.2.1.1 /S + Stop/ onsets

The majority of respondents have struggled with the /st/, /sp/, /sk/ onset clusters. In most cases the clusters are resolved by initial vowel epenthesis. The students use epenthesis in situations when a word is preceded by a consonant or consonant cluster, e.g. *the gi**rls*** **/e/*st**udy – 100%, li**ke*** **/e/*st**ories – 45%, schoo**l*** **/e/*st**arted – 63%, a**ll*** **/e/*st**udents – 81%, i**n*** **/e/*Sp**anish – 100%, thi**s*** **/e/*sp**aghetti – 90%, o**f*** **/e/*sc**hool – 72%.* In cases when a word is preceded by a vowel the epenthetic vowel is also inserted, e.g. *new* **/e/*st**art – 100%, new* **/e/*st**udents – 90%, the* **/e/*st**ore – 18%, stud**y*** **/e/*Sp**anish – 45%, ver**y*** **/e/*sp**icy – 18%.* Evidently, the probability of an epenthetic sound being used after a consonant or a consonant cluster is generally higher than after a vowel. However, the interesting part is not all vowels are equal in this regard.

As one can see, the best transition between a preceding word and an s/C/ cluster is provided by the sound /e/ or /ə/. In one example, ***the st**udents*, 0% of respondents inserted any kind of epenthetic sound in between the words, which could be expected considering the fact that the preceding sound and the epenthetic sound of choice in these examples are virtually equal in

quality. With the sound /i/ as a preceding sound, the number of respondents using an epenthetic sound increases. Moreover, following the sound /u:/, as in *new start*, the number of students inserting an epenthetic vowel is higher than after a lateral /l/ or a fricative /f/.

11.2.1.2 /S + Lateral/ /S + Nasal/ /S + Semivowel/ onsets

While /s+stop/ clusters are considered to be the most widespread and well-documented sources of initial vowel epenthesis amongst Spanish speakers, /s/ followed by other consonants might also be affected by epenthesis. In cases of the /sl/ onset preceded by a consonant, e.g. *wha**t*** /**e**/***sl**im – 45%, bi**g*** /**e**/***sl**ice – 36%,* the percentage of the respondents turning to epenthesis is lower than in cases of the /sl/ onset preceded by a vowel, e.g. ***to*** /**e**/***sl**eep – 18%, ver**y*** /**e**/***sl**im – 27%.* In the case of /sw/ onset being preceded by the vowel /u:/, e.g. *ne**w*** ***/e/sw**eater*, 36% of students used epenthesis to aid the transition, while 0% of respondents used epenthesis in the case of /sw/ onset preceded by weak /u/ or schwa in the example ***to** swim*, or in the example of /sw/ preceded by the consonant /s/, as in ***is sw**eet*.

While comparing the onset /sm/ preceded by a consonant, e.g. ***is*** /**e**/***sm**art – 36%,* with the onset /sm/ preceded by a consonantal cluster, e.g. ***and*** /**e**/***sm**all – 63%,* it becomes evident that the odds of an epenthetic sound being used after a consonant cluster are almost double the odds of an epenthesis being used after a single consonant.

When comparing s/C/ clusters, it becomes apparent that epenthesis is generally used by speakers more frequently before /s + stop/ combinations than before /s + lateral/, /s + nasal/ or /s + semivowel/ ones.

11.2.1.3 s/CC/ onsets

Since Spanish phonotactical rules only allow onsets consisting of one, or a maximum of two consonants, any CCC onsets are expected to be problematic; however, the text mainly focuses on clusters beginning with /s/. In examples of s/CC/ preceded by a consonant, the percentage turning to epenthesis was quite high, e.g. ***and*** /**e**/***st**rong – 63%, mai**n*** /**e**/***st**reet – 54%, hai**r*** /**e**/***sp**ray – 54%.* As evident, the percentage following the cluster is higher than the percentage following a single vowel.

While the /str/ cluster preceded by the vowel /i/ is modified by epenthesis by only 9% of the speakers, e.g. *ver**y*** ***/e/st**rong*, and the cluster /skw/ preceded by /e/ or schwa is adjusted by epenthesis by 18%, e.g. ***the /e/sq**uare*, in the word beginning with s/CC/ onset, when it is placed at the beginning of the sentence, e.g. ***/e/Spr**ing*, 81% of the respondents insert an epenthetic vowel before the consonant /s/, even though the last word of the preceding sentence, meaning the

word that precedes the word *Spring*, but is separated form it by comma, also ends in weak /i/, as in the example shown above. The examples show that the phonetical environment may have a significant impact on the frequency of insertion of epenthetic vowels; however, its influence does not cross sentence boundaries.

When comparing s/C/ clusters with s/CC/ clusters, one aspect draws the attention. The results of the experiment do not comply with the Interlingual Markedness Hypothesis, according to which, the longer the margins of a syllable are, the more marked they are considered to be, which by definition makes s/CC/ structures more marked than s/C/ ones. According to the Markedness Hypothesis, the structures that are more marked must be more heavily influenced by epenthesis. However, when one compares the results, the frequency of an epenthetic vowel placement before s/C/ clusters is at best equal, at times even higher than that of vowel insertion before s/CC/ clusters. Clearly the results are not conclusive, since there is not enough data to work with. However, further research must be done.

11.2.2 Codas

11.2.2.1 Codas created by the grammatical ending /ed/

The interesting thing about complex codas created by the grammatical ending /ed/ is that they are almost equally resolved by deletion as well as by epenthesis. Let us take a closer look at the examples of clusters mainly resolved by epenthesis. The word *asked* is broken up by an epenthetic vowel by 45 % of the respondents and is pronounced as either [ɑ:sk**e**d] or [ɑ:sk**i**d], with an extra vowel being placed in between the second and third consonant. However, 18% of the speakers resolved the cluster by deletion, therefore pronouncing it as [ɑ:sk] or [ɑ:sk**ə**]. The same pattern follows the word *worked*, which is broken up by an epenthetic vowel /i/ or /e/ by 54% of the students, as in [wɔ:rk**i**d], [wɔ:rk**e**d], while 9% of the speakers choose to delete the last consonant, e.g. [wɔ:rk**ə]**.

The words *learned*, which is resolved by epenthesis by 72% of the speakers, e.g. [lɛ:n**i**d] or [lɛ:n**e**d], and by omission of the final consonant by 27%, and the word *closed*, in which an epenthetic vowel is inserted by 27% of the respondents, [kləuz**e**d] and the last sound is omitted by 18%, [kləuz]. Noticeably, the epenthesis still prevails over deletion as the tool of resolving coda clusters. The words, described above, are followed by the words both beginning with a vowel and with a consonant, while the word *closed* is situated at the end of a sentence, which signifies that the phonetical environment has little if any effect on the decision between deletion and epenthesis.

11.2.2.2 Codas created by the grammatical ending /s/

Complex codas created by a grammatical ending /s/ in either plural forms or in third person singular are at times problematic for students. The interesting part is 99% of such cases are resolved by deletion. The deletion of final /s/ in plural forms of nouns could be seen in such cases as *girls* – 9%*, friends* – 27%, *students* – 36%*, questions* – 36%*, results* - 27%*, camps* – 9%. One speaker resolves the final CCC cluster in the word *camps* by deleting the first consonant /m/, the word results by one speaker by removing not one, but two final consonants /t/ and /s/. It is hard to say how the phonetical environment influences the process.

In the survey only one example shows some correlation between the frequency of deletion and the neighboring sounds. The sound /s/ in the word students is deleted by 36% of the respondents when it is followed by a consonant and by 18% of the respondents when followed by a vowel. Obviously, the evidence is not conclusive enough to make any final statements. The examples of deletion of final /s/ in third person singular are*: means – 9%, wants- 9%, works – 9%.* One of the respondents also simplified the word *works* by removing the medial consonant /k/. Evidently, the cases of deletion among third person singular are fewer than among plural nouns, and the reason for that might be the same as to why there are so few deletions of not grammatical endings. Even though in some words the letters not belonging to a grammatical ending are deleted, for example the sound /k/ in *Mark*, sound /t/ in *best*, /t/ in *Bridget*, /d/ in *child* or /t/ in *part*, the cases are very few and the process of deletion in all of them is carried out by only 9% of the speakers. The reason for that might be comprehension. While removing a plural /s/ or even saying '*it matter'*, instead of '*it matters'* does not make a speech incomprehensible, omitting the letter /t/ from the word *best* could seriously obstruct the understanding and interpretation of a sentence or a text. Most linguists agree that this is the reason why epenthesis prevails over deletion in second language acquisition; it is less damaging to a word.

Concerning the levels of the students, it must be noted that the higher the level of a student is, the less pronunciation mistakes he or she makes, including solving consonant clusters with vowel epenthesis. In other words, in the speech of elementary students more cases of epenthesis were detected than in the speech of pre-intermediate students, who in their turn were responsible for more cases of vowel epenthesis than intermediate students.

Conclusion

The thesis tries to give an accurate description of the Arabic, Spanish and English languages, mainly of their phonological properties, as well as syllable structures and phonotactical rules. The understanding of the languages and how they operate is crucial, since it is through them that the phenomenon of epenthesis is explored.

The second section of the theoretical part attempts to acquaint the readers with the consequential and topical research in the area of epenthesis, specifically vowel epenthesis. The quality of epenthetic vowels and their positioning and selection by native Spanish and Arabic speakers is demonstrated. While the main focus of the thesis is vowel epenthesis in interlanguage, some account of native language epenthesis is also given.

The practical part of the thesis presents an experiment involving the acquisition and analysis of recordings made by Spanish and Arabic students of English as a second language (L2). After thorough investigation of the recordings of the Arabic students, from Saudi Arabia one can conclude that the speakers experience problems with complex onsets consisting of more than one consonant and codas of more than two, although some mistakes of CC codas were also detected. According to the results of the experiment, Arabic speakers use vowel epenthesis within as well as across syllabic boundaries. No cases of epenthesis being used across word boundaries were perceived, even though, according to numerous studies Arabic speakers frequently use epenthesis across word boundaries to aid the transition. The results in that regard are not conclusive, since not enough data has been obtained to confidently state if vowel epenthesis is ever used by the Arabic speakers in interlanguage. More research must be done in the area. The experiment confirms the theory of onset and coda dialects, according to which in all onset dialects, which include Saudi Arabic dialects, an epenthetic vowel is placed in between the first and second consonant in CC clusters, CvC, and in between the second and third in CCC clusters, CCvC.

Detailed examination of the recordings made by Spanish speakers leads to a conclusion that Spanish speakers struggle with complex onsets, specifically s/C/ and s/CCC/ as well as with complex codas created by more than two consonants. Unlike in Arabic, the phonetical environment plays a crucial role in the phenomenon of epenthesis. Generally speaking, consonant clusters surrounded by consonants are more prone to being modified by vowel epenthesis. Furthermore, the quality of surrounding vowels also had an impact on the frequency of vowel epenthesis. On average the least cases of epenthesis of onset clusters were detected following the vowel /e/ or schwa, the increase was perceived after /i/ and the most cases were

identified following the vowel /u/. Regarding complex coda clusters, an interesting fact was detected. Complex codas created by grammatical endings were, on average, resolved by deletion by about 50% of the respondents.

Vowel epenthesis is a well-known documented phenomenon, recognized and used by a great number of people, however, it has been surprisingly under-researched. The use of epenthesis by many dialects of Arabic has never been studied. While many linguists focus on the placement of an epenthetic vowel, few study how the phonetic environment impacts that decision. Moreover, no studies on how the level of the TL, in this case English, affects the phenomenon of epenthesis were discovered. It is important to mention that the thesis does not conclusively declare the results of the conducted experiment; since the acquired data is insufficient. More research needs to be done on a broader scale.

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List of Tables

List of appendices

Appendix 1

Text created for Arabic speakers

Let’s talk about Jack. Next train leaves in six minutes. Grace went on a long trip to Brazil. As a gift I got a pink sweater. These plants are beautiful. She lost control of the train. The king of Greece in a grey sweater sits on a throne. It was his last chance. Spring is the best season. She asked a lot of questions. Josh has big problems. I love to ski. A person must sleep at least six hours. In September Mark stayed in London. The band plays fast songs. Animals have instincts. My boots were on the floor. We need to buy eggs. He was sixteen when the accident happened. Let’s go for a walk in the square. My home keys are in Josh’s bag. Children on the plane were screaming. Brad helped me. Marsha worked in summer camps. My ex-boyfriend is pretty and smart. John lived close to Prague. She left school last year. Josh needs extra work. Teacher explained the instructions. Cats don’t like water. I had a bad dream. Josh wants a sandwich. The street ends here. Words are important. Sunday comes after Saturday. The school changed. Tracy had a surprise birthday party. Five-sixths of the country is located near water. Birds can fly.

Appendix 2

Text created for Spanish speakers

Josh had a surprise birthday party. It is his new start. This cake is sweet. I don’t know how to swim. Marcy asked to stop the car. We found a wasp. This is a list of new students. Mark worked in summer camps. My ex-boyfriend is smart and strong. Girls study Spanish. His best friends like stories. You need to ask the teacher what ‘slim’ means in Spanish. It’s a good tradition. The child was crying. The students learned the rules. Mark wants a new sweater. Main Street is closed. The store is on the second floor. She had a big slice of pizza. The school started its new season. This hair spray is very strong. Jessica asked a lot of questions. I want to sleep. This spaghetti is very spicy. Spring is the best season. She works in the square. Bridget is very slim and small. The results were visible in two months. . All students are a part of school.

Appendix 3

Questionnaire for Arabic speakers

1) Is Arabic your mother tongue?

Yes/No

2) Do you speak Arabic at home/work?

Yes/No

3) How old are you?

Answer:

4) How long have you studied English?

Answer:

5) Is English the only foreign language you speak? If not, what other languages do you speak?

Yes/No

Answer:

6) Do you speak English at home/work?

Yes/No

7) Where are you from?

Answer:

8) What is your level of English?

Answer: elementary/ pre-intermediate/intermediate

Appendix 4

Questionnaire for Spanish speakers

1) Is Spanish your mother tongue?

Yes/No

2) Do you speak Spanish at home/work?

Yes/No

3) How old are you?

Answer:

4) How long have you studied English?

Answer:

5) Is English the only foreign language you speak? If not, what other languages do you speak?

Yes/No

Answer:

6) Do you speak English at home/work?

Yes/No

7) What is your level of English?

elementary/pre-intermediate/intermediate

8) Where are you from?

Answer: