

Effects of L1 Dominance on the Acquisition of English Sounds by Turkish/Persian Bilinguals

Abstract. This study will investigate the process of acquiring the sound structure of English by bilingual Turkish-Persian speakers in the south-west of Iran, more specifically addressing the question whether bilinguals will do better than monolinguals in pronouncing the sounds of English. The samples will be selected from 30 Turkish bilinguals as well as from 30 Persian monolinguals. Participants are high-school students learning English as a foreign language. There will be two experimental groups and two control groups in order to compare and analyze the data. The sound structure of three languages, i.e. Turkish, Persian and English, will be studied to discover structural similarities and differences between the native and the foreign languages. Also the participants' familiarity with producing and perceiving the native and foreign sounds will be tested to see (i) if there is dominance of one native language over the other, and (ii) whether the dominance is reflected in the pronunciation and/or perception of the English sounds. Finally, the participants' language attitude towards the native and foreign languages will be determined and related to the acquisition process. In order to meet the time frame, the study will be confined to the perceptual representation of only the vowel phonemes. As a first approximation, English texts with target words full of vowel sounds will be prepared plus a background questionnaire, which covers issues such as the participants' age, gender, L1, bilingual status, age of acquisition of the language(s) they speak, degree of using each language daily, and so forth.

Резюме. У цьому дослідженні вивчено процес отримання звукової структури англійської мови двомовними турецько-перськими ораторами на південному заході Ірану. Конкретна мета аналізу – чи будуть двомовні особу вимовляти краще, ніж монолінгви, звуки англійської мови. Зразки будуть відібрані з 30 турецьких білінгвалів, а також з 30 перських одномовних осіб. Учасники – учні середньої школи, які вивчають англійську мову як іноземну. Для порівняння та аналізу даних будуть дві експериментальні групи та дві контрольні групи. Буде вивчено звукову структуру трьох мов, тобто турецької, перської та англійської, щоб виявити структурні подібності та відмінності між рідною та іноземною мовами. Також буде перевірено знайомство учасників з вимовою і сприйняттям рідних і іноземних звуків. Нарешті, мовне ставлення учасників до рідних та іноземних мов буде визначено та пов'язане з процесом оволодіння. Для того, щоб задовольнити часові рамки, дослідження буде обмежено перцептивним поданням тільки голосних фонем. У першому наближенні будуть підготовлені англійські тексти з цільовими словами, наповненими голосними звуками, а також анкета, яка охоплює такі питання, як вік учасників, стать, L1, статус двомовності, термін вивчення мови, на якій вони говорять, ступінь використання кожної мови щодня і так далі.

Resümé. A kutatás az Irán délnyugati részén élő kétnyelvű török–perzsa beszélőknek az angol hangrendszer elsajátításának sajátosságait vizsgálja. Konkrétan azzal a kérdéssel foglalkozik, hogy a kétnyelvűek jobban elsajátítják-e az angol hangok kiejtését, mint az egy nyelvű beszélők. A kutatási mintát 30 török kétnyelvű és 30 perzsa egy nyelvű adatközlő közül alakítjuk ki. A résztvevők középiskolások, akik idegen nyelvként tanulják az angolt. Az adatok összehasonlítása és elemzésére céljából két kísérleti csoportot és két kontrolles csoportot hozunk létre. A kutatás résztvevői tanulmányozzák a három nyelv (török, perzsa és angol) hangrendszerét, hogy felfedezzék az anyanyelv és az idegen nyelvek közötti szerkezeti hasonlóságokat és különbségeket. Az időkeretek miatt a kutatás csak a magánhangzó fonémák észlelésére korlátozódik. Első lépésben meghallgatják az angol nyelvű szövegeket, amelyekben a szavak tele vannak magánhangzókkal, valamint kitöltenek egy háttér-kérdőívet, amely olyan kérdésekre terjed ki, mint például a résztvevők életkora, neme, első nyelve (L1), kétnyelvűségi szintje, a nyelv(ek) elsajátításának kora, az egyes nyelvek napi használatának mértéke stb.

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1. Introduction

Nowadays, English is the most extensively studied foreign language throughout the world. Since English has become a dominant international language and emerging various applications in different social media (specifically Facebook and Instagram) have recently developed, the number of enthusiastic users has also increased to learn more and more English language than in the past in order to communicate easily and perfectly in these settings.

Iranian people are no exception to this phenomenon and many of them, especially students, attempt to learn English at a high level permitting them to interact with foreigners all over the globe. Iran (also known as Persia) is located in Western Asia and has a population of about 81 million inhabitants (Wikipedia). Iran is bordered in the northwest by Armenia, the Republic of Azerbaijan, and the Azerbaijani exclave of Nakhchivan; in the north by the Caspian Sea; in the northeast by Turkmenistan; in the east by Afghanistan and Pakistan; in the south by the Persian Gulf and the Gulf of Oman; and in the west by Turkey and Iraq. The main and official language of the country is Persian (also called Farsi) but since Iran is a multicultural country comprising numerous ethnic and linguistic groups such as Persians, Turks, Kurds, Lors, Armenians, Arabs, Baluchis, Turkmen, Assyrians, and Georgians (among others), many other languages are spoken among these groups in distinct areas of the country as well, so that bilingualism or multilingualism is a common phenomenon.

The present researcher is Turkish-Farsi bilingual from East Azerbaijan, for whom English counts as a third or foreign language in this area. Therefore, studying the sound structure of English bilingual Turkish-Persian learners will be an interesting project for her to carry out.

Turkish has eight vowels: high front, high back, low front and low back. Each of these may be rounded or spread, making eight vowels in all (Van Heuven 1986 and references therein). Turkish has no tense-lax vowel contrast and no diphthongs. Turkish word stress is fixed final. The differences with English are large. Farsi has an even smaller vowel inventory, without a tense-lax contrast or schwa. The structure of the vowel system is typologically more common, with three degrees of vowel height (high, mid, low) and two constriction places (front, back) while rounding is unmarked (back vowels are rounded, front vowels have spread lips). Word stress in Persian is stem-final rather than word-final.

2. Objective of the study

The purpose of this study is to investigate the acquisition of the sound structure of English by bilingual Turkish-Farsi speakers. Accurate pronunciation of English sounds is often a problem for foreign-language learners. It has been argued that speech sound differences between L1 and L2 are an important source of pronunciation problems (e.g. Wang 2007 and references therein, see also next section). For

instance, articulating vowels such as schwa /ə/ is a problem for monolingual Persian speakers due to the absence of schwa /ə/ in Persian (so that /e/ will be substituted in Persian-accented English). This may be different for Turkish-Persian bilinguals since Turkish has an unrounded high vowel /u/ that might be a reasonable substitute for schwa. Foreign languages are typically acquired by adolescents or young adults in a school setting, after the age of 12, i.e. after that the acquisition of the first language has been completed. When one has learnt a first language, speech sounds in foreign languages are typically perceived in terms of the (phoneme) categories of the native language. These native categories were shaped during the first 12 months after birth (e.g. Kuhl & Iverson, 1995). If a learner cannot hear the difference between a foreign sound and its nearest equivalent in his native language, it will be very difficult to learn the correct pronunciation of the foreign sound. Nevertheless, there are indications that at least some adults have been able to learn to pronounce a foreign language in a way that cannot be distinguished from that of born and bred native speakers, despite the fact that the learning process did not involve early L2 exposure (Bongaerts, Van Summeren, Planken & Schils 1997). In Bongaerts et al. (1997) the English learners' native language was Dutch, which is closely related to English. It is unclear at this time if native pronunciation of English can be attained by learners whose native language is not related to English.

It is the primary purpose of my study to see how English learners with Turkish and/or Persian as the native language pronounce and perceive the vowels of English, and to compare this to the sound structure of the native languages. We will test the hypothesis that the perception and production of the English vowels will reflect the properties of the vowels in either Turkish, Persian or both, and that the Turkish or Persian influence will be stronger or weaker depending on the dominance of Turkish versus Persian in the bilingual learner. The performance of bilingual learners will be compared with that by monolingual Turkish and Persian learners of English (matched for age, gender and education) in order to establish whether English as a third language is easier than learning English as a second language.

3. Review of the literature

A comparison between English, Turkish, and Farsi language syllable structures and sound systems will be done. As a result of this comparison, the problematic areas that are responsible for pronunciation difficulties of bilingual Turkish-Persian speakers and monolingual Persian speakers of English will be identified (Navehebrahim 2012). In order to understand the role of the first language in the phonological acquisition of a second or foreign language, the emphasis will be given to the studies that have focused on the differences between English, Turkish and Persian phonological systems.

There are several studies about the effect of bilingualism on the learning of orthography, vocabulary, critical thinking, knowledge of the universal grammar,

topics in Turkish phonology, and etc. by different researchers such as Özçelik & Sprouse (2014), Aghai & Sayer (2016), Van der Hulst & Van de Weijer (1986), Khalilzadeh (2014), and Merrikhi (2011). There is a lack of research in the field of sound structures of English as a foreign language acquired by a Turkish-Persian bilinguals in Iran. Therefore, I decided to address this subject and study it in detail. In order to understand the role of the first language in the phonological acquisition of the foreign language, the emphasis has been given to the studies that have focused on the similarities and differences between the phonology of Turkish and English phonological system as well as between Persian' and English.

Flège (1988) expresses in his article that pronunciation is a crucial element of human interaction because speech carries affective and social meaning in addition to referential meaning. Flège argues that people seldom speak their own native language with an accent they themselves judge to be unacceptable. However, many individuals speak a foreign language with an undesired accent, or hear their native language spoken with a foreign accent. Moreover, learners with a foreign accent may be unintelligible to a degree that they are often misunderstood, or they may be intelligible but understanding them requires more effort (e.g. Hall 2007 and references therein). Intelligibility is the most desirable objective for foreign-language learners. Intelligibility is the degree to which a speaker can be understood, or in the words of Kenworthy (1987: 13) "intelligibility is being understood by a listener at a given time in a given situation."² In the case of bilingual learners, it is better to start by defining bilingualism and its role in learning English as a third or foreign language at first. Some of the definitions related to the bilingualism are as follows:

According to Webster's dictionary (1961), bilingual(ism) is defined as 'having or using two languages especially as spoken with the fluency characteristics of a native speaker; a person using two languages especially habitually and with control like that of a native speaker' and bilingualism as 'the constant oral use of two languages' (Hamers and Blanc, 1989). Some linguists, such as Bloomfield (1933), asserted that bilingualism only refers to "the extreme case of foreign language learning where the speaker becomes so proficient as to be indistinguishable from the native speakers round him". Furthermore, Haugen (1972) suggests a much less detailed definition, namely that bilingualism is the "knowledge of two languages" regardless of the degree of competence and without any need "for a bilingual to use both his languages." So, it can be said that bilingualism is simply the property of a speaker that s/he commands two (instead of one) languages. Typically one language will be the native language (also mother tongue) while the other language is acquired at a later stage in life. However, two (or even more languages) may also be learned (almost) simultaneously in the early stages of one's life, in which case we may speak of early bilingualism. Bloomfield's definition would apply to the phenomenon which we would call 'perfect bilingualism'. Merrikhi (2011) argues that becoming bilingual is a way of life. Your whole person is affected as you struggle

to reach beyond the confines of your first language and into a new language, a new culture, a new way of thinking, feeling, and acting (Brown 1994). Kluge (2007) also states that bilingualism is a social phenomenon that occurs as a result of language contact. According to Raymond et al. (2002), bilingualism as both a cognitive and social feature of a person is influenced by the details of the individual's life and also has effects upon language education and related domains. My study will make an effort to answer the question: does bilingualism influence the acquisition of the sound structure of English as a third or foreign language?

Part of my study will be to determine the degree of language dominance of Turkish versus Persian on the part of the English learners in my experiments. Language dominance will be determined by administering a questionnaire to all the participants of my study, in which they will be asked to estimate their experience with, exposure to, and time spent on Turkish and Persian in various stages of their life. They will also be asked when (at what age and in which order) they learned each of the two languages. I will review the existing literature on language dominance testing, using Silva-Corvalán and Treffers-Daller's (2015) handbook as a starting point.

4. Materials and Method

Participants in this investigation will be 32 Azeri-Turkish bilinguals (16 female, 16 male) as well as 16 Persian and 16 Turkish monolinguals (8 male, 8 female in both languages) with the same level of education and gender. Targeted Azeri Turkish bilinguals in this study live in North West of Iran in the city of Marand located in East Azerbaijan Province. The local language and mother tongue of speakers hailing from this area is Azeri Turkish but the people are exposed Persian from birth onwards as well, since the official language of the whole country is Persian. They use both Turkish and Persian in their daily life in various occasions and situations in the school, administrations, textbooks, newspapers, etc. with different people.

Vowel errors constitute an obvious potential source of unintelligibility (Van Heuven 1986). Turkish has an unusual but simple eight-member vowel inventory, traditionally described with the aid of three binary features: [±back], [±round], and [±high] (Swift 1963, Pietro 1972, Özçelik & Sprouse 2014). Turkish has neither diphthongs nor a length contrast (Van Heuven, 1986). Persian is characterized as a syllable-timed language (Windfuhr 1979: 529). Wilson and Wilson (2001) analyzed the phonological features of Persian and asserted that Persian has eleven vowels and diphthongs (p. 179).³ Hall (2007) also analyzed the vowels in Persian and asserted that "vowels do not have any variation in length in formal speech" (p. 10). However, although no phonemic length contrasts exist, the three point vowels (i, a, u) are said to be short and the other three vowels are phonetically long (Toosarvandani 2004). English is characterized as a stressed-timed language (Dauer 1983, Van Zanten & Van Heuven 1997 and references therein). In an overview of

the English sound system, specifically Standard American English (SAE), has 46 phonemes: 24 consonants and 22 vowels and diphthongs (Olive, Greenwood & Coleman 1993).⁴ English has a neutral vowel schwa which is used in unstressed syllables only. English learners with a native language without a neutral vowel tend to incorrectly substitute the nearest full vowel in their L1 inventory for English schwa. I expect the substitute vowel to be /a/ when the learner is (dominant in) Persian but /u/ when s/he is Turkish. Moreover, (American) English has a systematic subdivision in its vowel inventory with four lax vowels (which are pronounced short and rather towards the centre of the vowel space) and (at least) six tense monophthongs (which are pronounced long and with more extreme vowel qualities (i.e. at the outer edges of the vowel space)). In the articulation and perceptual representation of the English vowels by learners whose L1 lacks the tense-lax contrast, we typically find that the length parameter is used but that the characteristic trade-off between vowel duration and quality is absent (Van Heuven 1986, Wang & Van Heuven 2006, Escudero & Boersma 2014, Schwartz et al. 2016). So, based on the sound system of three targeted languages at issue, as well as due to the lack of research in this field on Turkish-Persian speakers of English and observing the similarities and differences between them and monolingual Persian speakers, I will conduct the current study to identify the effects of bilingualism on the acquisition of the sound structure of English as a foreign or third language. The findings of this research present to EFL teachers and students, specifically Iranian EFL teachers and pupils, a set of general ideas about learning the sound system of English language in bilingual Turkish Persian speakers. To conduct the study, a list of English words will be given to the participants to read and pronounce them carefully. Speakers will be recorded during the process. Recordings will be analyzed using Praat speech processing software (Boersma & Weenink 1996, 2016). In order to elicit subjective information from the participants, a background questionnaire will be used as well, which covers issues such as the participants' age, gender, mother tongue (L1), bilinguality status (L1 and L2), age of acquisition of the language(s) they speak, degree of using each language daily, and etc. (also see above).

The second part of this stage of the study will be a perception experiment in which participants in each of the three groups (monolingual Turkish, monolingual Persian, bilingual Turkish-Persian) will be asked to state to which of the vowels in their native language(s) the vowels of English resemble most. This perceptual assimilation will be done twice for the bilingual participants, once testing the assimilation to Turkish and a second time to test the assimilation to Persian. The methods will be the same as those used by Tsukada et al. (2004) and Sun and Van Heuven (2007). However, in my study I will ask the participants to do the identification and rating task twice on the same set of stimuli so that I can determine the within- participant consistency. The difference in labelling consistency between

two languages has been advanced as a correlate of language dominance (Van Heuven 2017) and references therein). The adequacy of this hypothesis will then be tested against the questionnaire data obtained from the participants. The results of the perceptual assimilation task will serve as a source of explanation of pronunciation and perception errors made by the participants in English.

5. Process of recording

Recordings will be made individually in a quiet room in an institute or a school that will be selected for the survey. A close-talking headset microphone will be used to diminish ambient noise and reverberation. Participants will be given a few minutes to familiarize themselves with the target words. If words are unknown, they can use a word list full of high frequency words that contain the same target sounds, but not to expose to any other sound source related to the target words. At the end of the recording session, the participant will fill in a questionnaire designed to establish the speaker's demographic parameters and language background (see above). The stimuli for the perceptual assimilation task will be the vowels of English spoken by a male and a female speaker of Standard American English in /hVd/ context (as in Sun & Van Heuven 2007, Wang & Van Heuven 2006). These stimuli will be presented in two different random orders over headphones using the Praat MFC (Multiple Forced Choice) module to control the stimulus playback and keyboard response collection.

6. Segmentation and labeling of responses

The target words and relevant segments associated with them will be located in the recordings. Segment boundaries will be entered in a time-stamped annotation tier (often referred to as a Text Grid) using the Praat speech processing software. The contents of each segment will be labeled in the TextGrid in quasi-phonetic notation. For most segments, boundaries can be located quite precisely by using visual criteria only.

The first stage of this project will culminate in a contrastive analysis comparing the acquisition of sound structure of English language by bilingual Turkish-Persian speakers in Iran.

7. Perceptual representation of the English vowels by Turkish-Persian bilinguals

In the second stage of the project I will map out the perceptual representation of the English vowel system (monophthongs only) in the minds of native American listeners and of monolingual and bilingual Turkish and/or Persian learners of English.

Using the methods explained in Van Heuven (1986, 2017) a set of vowel tokens will be synthesized in a fixed /bVd/ frame which will vary systematically in terms of vowel quality and vowel duration. The vowel tokens will be varied in

a three-dimensional space defined by the first formant (F1), second formant (F2) and the duration as determined for natural tokens of the words bead, bad, bawed and bood, representing the four corners of the English vowel quadrilateral. F1 and F2 will then be sampled in seven steps of approximately 1 Bark; and durations will be varied between 50 and 250 ms in five 50-ms steps. This will yield a stimulus set of $7 \times 7 \times 5 = 245$ stimuli. The experiment will be repeated one day (or week) later with stimuli in a different random order so that the respondents response consistency can be established. The results of this second stage of the project will allow me to determine the relationship between the individual participant's vowel production and perception in English. I will test the hypotheses that the duration parameter but not the vowel quality parameters will be used adequately (in comparison to the use of these cues by American native listeners), and that the perceptual representation of the English vowels will be characteristically different between Turkish and Persian monolingual learners of English, reflecting the organization of the vowel systems in the respective L1s. It is also expected that the perceptual representation of the English vowels reflects the Turkish versus Persian language dominance in the case of the bilingual learners of English.

8. Time schedule

This study will be conducted during the academic years of 2018 to 2021 and is to be defended at the University of Pannonia in Veszprém under the supervision of Prof. Vincent van Heuven. Eventually, it will be published by the Center for Hungarian Studies and Publications Inc.

2017/18: Literature study, contrastive analysis of the sound systems of Turkish, Farsi and English. Write paper/chapter.

2018/19: Prepare perceptual assimilation experiment and devise questionnaire to establish language dominance with Turkish-Persian bilinguals. Record monolingual Turkish, monolingual Farsi and bilingual TF learners of English, as well as a native English control group. Record speech for the L1 (both T and F in the case of bilinguals) and for L2 English. Existing formats for English will be used (see Wang Hongyan 2007, Wang Zhongwei 2016). Turkish and Farsi materials will be devised analogously. Collect questionnaire responses and run perceptual assimilation test using the same participants on all three occasions (in one long session). Acoustic analysis of the vowel recordings, comparing how well the L2 vowels match with L1 vowels. Write two papers/chapters.

2019/20: Construct a set of artificial vowels and run experiments to map out the perceptual representation of the English vowels for the three groups of learners and for a control group of native English listeners (long distance, through the internet).⁵ Write paper/chapter.

2020/21: I will use the final year to meet with delays, rerun statistical analyses, and write and defend the dissertation.

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