
Arabic and English Phonotactic Convergence: A Case Study

Guessas Abibaker Seddik, Benhattab Abdelkader Lotfi

English Department, Oran University 02 Ahmed Benahmed, Algeria

Email address:

abshirbelhana@yahoo.com (G. A. Seddik), benhattabdelkaderlotfi@gmail.com (B. A. Lotfi)

To cite this article:

Guessas Abibaker Seddik, Benhattab Abdelkader Lotfi. Arabic and English Phonotactic Convergence: A Case Study. *International Journal of Language and Linguistics*. Special Issue: New Trends in Arabic Sociolinguistics. Vol. 5, No. 3-1, 2017, pp. 1-5.

doi: 10.11648/j.ijll.s.2017050301.11

Received: February 8, 2017; **Accepted:** February 21, 2017; **Published:** March 10, 2017

Abstract: Learning a second language bears traces of the first language at different levels and with differing degrees. The number of studies devoted to the morpho-syntactic and lexical outcomes of transfer seems to outnumber those investigating phonological ones. This paper tries to investigate variation in Algerian Arabic speakers' performance of English as a second language with an emphasis on the phonological level. It further studies the production of English phonemes /t/ and /d/ by these learners. There are differences in the realisation of /t/ and /d/ in Arabic and English phonological paradigms. While they are realized as dentals in the former, they are produced as alveolars in the latter. The observation and investigation of the data under light for the present study reveal that, as learners of English, our informants display variation in the realization of /t/ and /d/ while using English in formal settings. These informants realize them as dentals in some English words and alveolars in some others. Our study is a trial to understand the reasons behind such variation. There seems to be some interference mechanism that does not operate at all phonological contexts. We further hypothesized that in addition to interference there are mechanisms of convergence between the phonotactics of the two languages operating in contact situation involving Algerian Arabic and English. The results of this investigation also reveal that the above mentioned hypotheses seem to be more plausible than the one related to informants' English proficiency as a reason behind variation in the production of /t/ /d/ and other English phonemes.

Keywords: Phonology, Interference, Transfer, Interlanguage, Language Contact, Phonotactics

1. Introduction

The Observation of Algerian learners of English in academic contexts has made us realize that when involved in English oral expression activities, these learners display variation in the pronunciation of the phonemes /t/ and /d/. These stops are articulated in English words in two different manners i.e. as dentals following the Arabic phonological paradigm, and as alveolars following English, the target language (L2) of our informants.

The objective of the present paper is to interpret the reasons behind such variation. This study has been conducted under a contact linguistics perspective whereby we advocate for a cross linguistic influence and a possible interference of both languages on each other. Our study also tries to link the claims made by linguistic Universalist theories such as UG [1] and language contact involving Arabic and English. The challenge lays in the fact that these two languages are

typologically remote.

Algerian Arabic is the native language of the participants in this research. It is a variety of Arabic, a language with a tendency for a derivational morphology. This Semitic language has many varieties such as Modern Standard Arabic, Eastern Arabic dialects and Maghrebi Arabic to cite only these. Modern Standard Arabic enjoys the status of an official language and sometimes the one of a national language in many Arab countries. Eastern Arabic dialects are mainly spoken in the Middle and Far East of the Arab nation. Maghrebi Arabic dialects are used in Mauritania, Morocco, Libya, Tunisia and Algeria [2].

Algerian Arabic has many varieties that constitute dialect continuums from west to east Algeria and from north to south. The western part of this dialect continuum shares many similarities with the eastern dialects of Moroccan Arabic. Eastern Algerian dialects continuums on their parts have some common characteristics with Tunisian dialects.

English is the second language investigated in the present

paper. It is a language that has gained spread all over the world as a global lingua franca. It is a language of the Indo-European family. English is taught as a foreign language in Algerian schools and universities.

2. Interference

Interference is roughly speaking a sociolinguistic phenomenon that obtains in language contact situations involving languages and/or language varieties. The present study concentrates on interference [3] as it obtains in contact situations between English and Arabic with its different varieties in Algerian academic contexts.

Studying languages in multilingual settings may explain the common thread between contact linguistics which is a branch of sociolinguistics and second language acquisition research (SLA henceforth) which is a subfield of applied linguistics. Cross-linguistic influence is a phenomenon that is well investigated in both disciplines. While sociolinguists focus on issues related to convergence and divergence between languages in contact, similar observable phenomena are labelled as positive or negative transfer in SLA literature.

Phonological and morpho-syntactic similarities between two or more languages in contact situations lead to convergence processes. Differences, on the other hand, lead to instances of language divergence. Similarities between the learners' first and second languages may facilitate second language acquisition. Differences may comparatively slow down such process according to some SLA theories such as the ones of Contrastive Analysis Hypothesis and Error Analysis [4].

These processes operate, for example, at the level of phonotactics which is the phonological system of permissible and non-permissible phonemes combinations in a given language [5]. In fact, the subsequent move of applied linguistics and SLA research towards sociolinguistic aspects of language is very clear in Hyme's communicative competence and the interactionist theories. This move is said to be more dynamic in comparison to the early and more static structural and generativist models. This shift is also observable in Swain's inclusion of social feedback in her Comprehensible Output Hypothesis as opposed to Krashen's Natural Order and Comprehensible Input Hypotheses [6] total focus on language internal processes.

Dawood [7], Alam [8], Hamdan [9] and Abu Guba [10] are among several scholars who made contrastive studies between English and Arabic varieties, especially in the field of SLA. However, as observed by Muysken, studies devoted to morpho-syntactic analysis and interpretation of bilingual phenomena outnumber the ones focussing on the phonological aspects of bilingual language. He asserted that: "*The study of phonology in language contact remains underrepresented, not just on the empirical, but certainly also on the conceptual level*" [11].

This seems applicable to English-Arabic bilingual studies too. Another important observation made by Muysken in his review on studies on languages in contact is that: "*The*

phenomenon of interference is much less studied, and it is intriguing to consider why this is" [12].

Muysken further argues that linguistic natural data resulting from the interactions between languages in contact in bilingual settings can be classified as interference and code-switching. While phonological and morpho-syntactic influences are present in both contact processes mentioned above, inclusion of lexical items from one of the two languages are only found in code-switching.

A thorough examination of the Algerian Arabic phonological systems was made by Bouhadiba [13] who, among several other scholars, mentioned that the two phonemes /t/ and /d/ are dentals in Arabic [14]. They are articulated by putting the tip of the tongue on the back of the upper teeth. This is different from English /t/ and /d/ which are alveolars [15]. They are articulated by putting the tip of the tongue on the alveolar ridge.

3. Methods

As mentioned above, some Algerian learners of English articulate /t/ and /d/ in English words as dentals i.e. the same manner as they produce them in their native language, Algerian Arabic. Nevertheless, they sometimes produce these stops the way they should be produced in English i.e. as alveolars.

The main concern of the present paper as it has been stated above is a trial to answer the following question: what makes Algerian Arabic speakers learning English display two different articulations of the phonemes /t/ and /d/ in English words i.e. as dentals in words such as take, style, pet, den, feeding, side and as alveolars in words such as try, truck, train, dry, and drive?

We put forward the hypothesis that when the phonotactics of the two languages diverge, the learners resort to their L1 in articulating the phonemes /t/ /d/ and when the two languages phonotactics converge, the learners articulate them as in the L2.

3.1. Research Tools

To investigate the research question and test the hypothesis, a case study was carried out. According to Bromley, a case study is: "*a systematic inquiry into an event or a set of related events which aims to describe and explain the phenomenon of interest*" [16].

The setting of the research is a secondary school in the west of Algeria where Algerian Arabic is a native language to the informants and where English is taught as a foreign language. The total number of the informants of our research is twenty pupils aged between 17 and 20 years old. Seven of them are males and thirteen are females. The participants' language competencies in English range from intermediate to pre-advanced. All of them, however, expose adequate mastery of morphology, syntax and semantics. They also have a satisfactory mastery of phonology except for subtle differences between the two languages as in the case of the difference between Arabic dental /t/ and /d/ in comparison to

the English alveolar /t/ and /d/. They tend to sound similar to an untrained ear.

Table 1. Research participants.

Gender	Number	Age
Male	7	(17-19)
Female	13	(17-19)
Total	20	

3.2. Procedure

Participants were presented with 10 English words where /t/ /d/ phonemes occur in word initial middle and final positions. They were asked to read these words as fast as possible to see who will finish in the shortest time. This was done to divert them from monitoring their pronunciation by focusing on speed instead of correctness.

We recorded and then interpreted the pronunciation of

these words in order to find out how the two phonemes were articulated. Pronunciations of /t/ /d/ as dentals were assigned number 1 while their pronunciations as alveolars were assigned number 2.

4. Results

As illustrated in figure 1 below, the phonemes /t/ /d/ are pronounced as dentals by 85% of the students (17 out of 20) for the words: *tell, after, light, day, today* and *bird*. The two phonemes occur at initial, middle and final positions. On the other hand, only 15% of the participants pronounced the same words correctly (03 out of 20). A possible interesting result might be that all the students (100%) articulated the two phonemes correctly in the words: *try, retry, drive and redraw*. This is illustrated in figure 1.

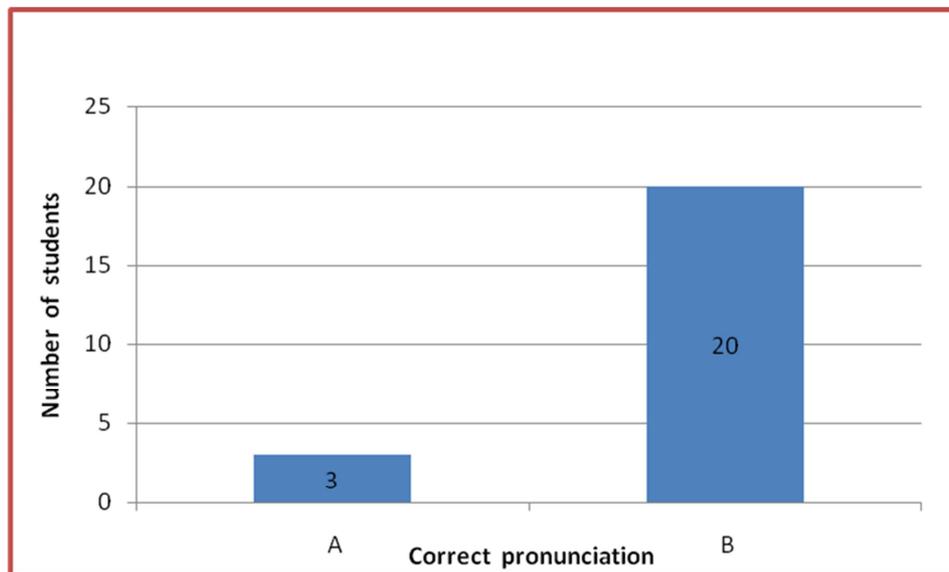


Figure 1. Results of the case study. A=correct pronunciation of words *try, retry, drive and redraw*. B= correct pronunciation of the words *tell, after, light, day, today and bird*.

5. Discussion

The results of the present study seem to partly confirm one of the general tendencies in the field of bilingual studies i.e. that interference is one of the outcomes of contact between languages. There seems to be some interference of Algerian Arabic phonological system on the production of English phonemes in foreign learning situations. Interference might be defined as the influence of one's native language on foreign language learning and use. This contact phenomenon takes place at the phonological, morpho-syntactic and lexical levels. According to John Edwards [17], such an interaction between learners' native and foreign languages might be described as a case of interference if caused by *linguistic factors*, and a case of code switching if motivated by extra-linguistic factors such as social or conversational ones.

The influence of learners' mother tongue on second or foreign language learning is a well-studied issue in second

Language learning. Some scholars call this process *interlanguage* [18]. Scovel, for instance, investigates the prevalence of non-native accents in foreign language learning. He comes to the conclusion that foreign accents prevail when second language learning takes place at a subsequent phase to the acquisition of speakers' first language [19].

Flege reaches the same conclusion in a study investigating 240 Korean learners of English. He observes unquestionable influences of Korean phonological system on the one of English as it is used by these learners. A possible example would be the one of vowel epenthesis which can be defined as the insertion of an extra vowel in a word [20]. If, for instance, the first language does not allow consonant-consonant cluster such as /dr/, as in *drive* because it permits only consonant-vowel combination, this word is likely to be pronounced as /dəraiv/ with a schwa. Flege argues that this might be related to the Critical Period Hypothesis in second language learning:

“Phonetic categories or mental representations of speech sounds in the L1 are stabilized by age five to seven. After that point, new phonetic contrasts will be processed through such an L1 filter, and hence it is more difficult, although not biologically impossible, to detect and produce L2 categories that are not salient. Ironically, then, foreign accents may arise ‘not because one has lost the ability to learn to pronounce, but because one has learned to pronounce the L1 so well.’ [21]

Foreign accent as it is observed in second language learners might be due to the filtering of phonologic learning through the phonological system of the first language which is established by age seven. This could be a plausible interpretation for incorrect English pronunciation of the two stops by most of our informants (85%).

Nevertheless, the question that remains is the following one: why is L1 interference not operational on the clusters /tr/ and /dr/ since all the informants of the present study pronounced them as English alveolars and not as Arabic dentals?

The results of the present investigation's case study seem to corroborate the hypothesis that we put forward in relation to the influence of the phonotactics of the languages being in contact in learning situations. In fact, the phonotactics of both Algerian Arabic and English allow the consonants cluster /tr/ and /dr/ as in the words *traab* تُرَاب (dust) and *draahm* دِرَاهِم (money) without any vowel between the two consonants. Articulating /t/ and /d/ as dentals in the words *try* and *drive* pushes the speaker to insert a vowel, either a schwa or a short /e/. This epenthesis is inexistent in the phonotactics of the two languages for the consonant clusters /tr/ and /dr/. Another observation that corroborates our hypothesis arguing for Algerian Arabic interference and the influence of its phonotactics paradigm relates to the fact that English intra-lingual phonotactic system does not prevent the dental realisation of /t/ and /d/ in the words ‘tell’, ‘after’, ‘light’, ‘day’, ‘today’ and ‘bird’.

Another possible interpretation might be that alveolar realisation of English /t/ and /d/ in words like ‘try’ and ‘drive’ by Algerian learners does not result from any interference of their first language i.e. Algerian Arabic. It may result from an English specific intra-lingual phonotactic output.

We are, consequently, left with a contradiction or a paradox. In one case Algerian Arabic interferes in the articulation of the English /t/ and /d/ in some phonological contexts and it does not in other contexts. An alternative viable interpretation to this contradiction seems to be the one of convergence between the intra-lingual phonotactics of the two languages for the consonant clusters /tr/ and /dr/.

The negligible percentage (15%) of correct realisations of /t/ and /d/ by our informants may be interpreted by these learners advanced language proficiency in comparison to the majority of informants (85%). It however cannot account for the consistent correctness by all the participants (100%) in their /tr/ /dr/ words pronunciations.

Even if Muysken restricted the label code switching to the mixture of two languages codes that comprises lexical items

in the same utterance, this does not seem to be based on totally irrefutable evidence. Therefore, one can wonder whether the phonological phenomenon discussed in this article cannot be a case of code mixing at the phonological level. If this is the case then a phonological variant of Poplack’s morpheme constraint might exist. The same thing can be said for Myers Scotton’s model [22]. As for all linguistic theories; these two models do not enjoy a total consensus among the contact linguistics research community. They are; however, crucial aspects in any possible future investigation of the topic discussed in this article.

6. Conclusion

Whether it is a phenomenon of *interference*, *transfer*, *code-switching* or *interlanguage*, the interactive influence of languages on one another is an undeniable fact of languages in contact. Whether this influence occurs in formal settings such as classrooms or natural ones such as multilingual societies, language systems usually exert influences on each other. The case study in this article tries to investigate and interpret the effects of an aspect of the Arabic phonological system on the articulation of the voiceless and voiced stops /t/ and /d/ in English being a foreign language in Algeria. Although the results were not inconclusive, they may justify a deeper and a lengthier study of this phenomenon in order to elucidate what seems to be a paradox.

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