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## Syllabification of final consonant clusters: A salient pronunciation problem of Kurdish EFL learners

Mohammad Hossein Keshavarz<sup>a,\*</sup>

<sup>a</sup> *Girne American University, North Cyprus*

### ABSTRACT

While there is a plethora of research on pronunciation problems of EFL learners with different L1 backgrounds, published empirical studies on syllabification errors of Iraqi Kurdish EFL learners are scarce. Therefore, to contribute to this line of research, the present study set out to investigate difficulties of this group of learners in the pronunciation of consonant clusters (CCs). The data for this study were collected through classroom observation and a pronunciation test. Initially, students' difficulties in pronouncing difficult English clusters were diagnosed in their oral performance in the author's graduate classes at a private university in Northern Cyprus. Subsequently, 18 Iraqi Kurdish students volunteered to read aloud a short paragraph, sentences containing the problematic consonant clusters, and a word list while being audio-recorded. Data analysis showed discrepancies in the participants' pronunciation of consonant clusters, i.e., while they did not exhibit any problem in the pronunciation of initial CCs, most of them employed vocalic epenthesis (insertion of an additional vowel), as a repair strategy, in word final position to facilitate the pronunciation of complex clusters of the TL (Target Language). This can be attributed to the influence of the mother tongue as Kurdish phonotactics does not allow certain CCs in word final position. However, other factors such as the role of modelling, and lack of sufficient exposure to the TL may have contributed to the participants' pronunciation problems. Moreover, since all of the participants were adult EFL learners, it is safe to assume that such errors might have become fossilized in their interlanguage. Therefore, in terms of pedagogy, it is suggested that pronunciation problems of EFL learners should be dealt with during early stages of second language acquisition in order to prevent fossilization.

**Keywords:** syllabification; final consonant clusters; fossilization; Kurdish EFL learners

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\* Corresponding author: ELT Department, Faculty of Education, Girne American University, North Cyprus  
Email address: mohammadkeshavarz@gau.edu.tr

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## Introduction

English pronunciation has been treated differently in various language teaching methodologies. Two extreme views in this regard include grammar-translation method, in which pronunciation played no role whatsoever, and the audio-lingual method, which laid a great deal of emphasis on teaching pronunciation, mainly through mimicry drilling of minimal pairs. In the communicative approach, however, pronunciation is not taught as a separate module, rather it is integrated into other oral tasks as in this method there is a shift from teacher-centered approach to task-based group activities.

It should not be implied from the above that in communicative language teaching pronunciation does not receive any attention. In fact, as Morley (1991) asserts, “intelligible pronunciation is an essential component of communicative competence” (p. 488). She maintains that ignoring learners’ pronunciation problems and errors is “an abrogation of professional responsibility” (p. 489). Therefore, one of the main goals of EFL practitioners should be enabling learners to establish and maintain communication with native and non-native speakers of English alike in an intelligible manner.

In recent developments in the field, in the context of English as the world major lingua franca, although native speaker model of pronunciation is no longer the goal of English language teaching, the significant role of pronunciation in multilingual/multicultural communication has been acknowledged. Research in this area has shown that lack of intelligibility will lead to failure in communication. In this regard, pronunciation, as the main contributory factor to communication breakdowns, has gained unprecedented momentum. Jenkins (2000), for instance, in her analysis of communication breakdowns between speakers of some L1 backgrounds, found that the vast majority of these breakdowns (27 out of 40 occasions) were due to pronunciation problems. Further research in this area has shown that new varieties of English differ mostly from one another in the realm of pronunciation. Furthermore, it has been proven that the perception and production of phonological features of English as a lingua franca is a vital requirement for maintaining global intelligibility among different NN (non-native) speakers of English (cf. Dauer, 2005; Derwing & Munro, 2005; Luchini, 2004; Luchini & Kennedy, 2013; Smith & Nelson, 2006). Thus, it can be concluded that intelligible and comprehensible pronunciation is crucially important in intercultural communication.

With this brief introduction, let us now move on to a short description of syllable structures of English and Kurdish. It should be pointed out in passing that the participants in this study spoke Sorani Kurdish, which enjoys a more literary status compared to other varieties of this language. (For a detailed account of Kurdish, see Haig & Matras, 2002; Thackston, 2006; and Walther & Sagot, 2010).

### *Syllable Structures of English and Kurdish*

A syllable is a unit of pronunciation typically larger than a single phoneme and smaller than a word. For example, a word like **happiness** consists of three syllables. The term syllable is defined in the way in which vowels and consonants combine to form clusters. The vowel, which is the obligatory element of the syllable, is called the **nucleus** or **peak**. The peak may be preceded by one or more consonants, which constitute the *onset* of the syllable, and it may be followed by one or more consonants, which form the *coda*. For instance, in the English word *man* the onset is /m/, the peak is /æ/, and the coda is /n/ (cf. Roach, 2014; Trask, 1996).

Languages differ in the way consonants and vowels are combined to form syllables, and in each language there are certain phonological rules, called phonotactic constraints, that restrict the type

of consonants that can co-occur in the onset or coda positions. Greenberg (2005) and Schreier (2005) claim that consonant clusters are rare or uncommon structures and are not found in the majority of the languages of the world. This seems to be a strong and untenable claim. It would perhaps be safer to assume that elaborate and complex syllables and consonant clusters are rare. Contrary to the claim made by Greenberg and Schreier, Locke (1983), who investigated the syllable structure of 104 different languages of the world, found that 39% of them had word initial consonant clusters, 13% had final clusters, and 48% of them allowed consonant clusters both in the initial and final positions.

At any rate, English syllable structure with its elaborate syllable types is extremely difficult for EFL learners, especially for speakers of languages with a rather limited range of CV structure, such as Chinese and Korean (cf. Chang, 2004; Lee, Joh, & Cho, 2002; Lin, 2001a and 2001b). English allows up to three consonants in the initial position and up to four consonants in the final position **(CCC)V(CCCC)**. Examples include *attempts*, *strengths*, *texts*, and *twelfths*. This makes the pronunciation of English consonant clusters immensely difficult for most EFL learners. As Carlisle (2001) asserts, the longer the onset or coda, the more difficult the syllable is considered to be. Thus, it can be imagined how challenging this would be for speakers of languages, like Korean, whose native language does not allow any CCs either in the initial or final positions.

While literature is rich in the analysis of syllable structures of English and many other languages for educational purposes (cf. Altenberg, 2005; Broselow, 1983, 1988; Chang, 2004; Ingram & Park, 1998; Jabbari & Samavarchi, 2011; Lee, Joh, & Cho, 2002; Lin, 2001a), Kurdish phonology, in general, and pronunciation problems of Iraqi Kurdish EFL learners, in particular, have not been investigated sufficiently. Two recent studies include Rahimpour and Saedi Dovaisi (2011), and Sediq Zahedi, Alinezhad, and Rezai (2012). Rahimpour and Saedi Dovaisi give a comprehensive account of Kurdish consonants and vowels; however, they briefly touch upon Kurdish syllable structure. They assert that “the syllable structure of Kurdish can be represented as (C) CV (C) (C) (C). This means that Kurdish permits clusters of three consonants finally and two consonants initially” (p. 76). On the other hand, the study conducted by Sediq Zahedi et al. (2012), is more elaborate, but it is restricted to Erdelani Kurdish (a variety of Kurdish spoken in Sanandaj, Iran). The syllable structure they propose for Kurdish is *CCVCC*, which is more realistic than the one proposed by Rahimpour and Saedi Dovaisi, with three consonants in the final position.

The same syllable structure, namely *(CC)V(CC)*, is used in the Sorani variety spoken by participants of the present study. Then, one may wonder why Kurdish speakers experience difficulties in pronouncing English clusters consisting of two consonants in word final position if their native language allows such clusters. The answer may lie in the fact that according to Kurdish phonotactics certain consonant clusters are not permitted in the final position, as will be explained below.

#### *Phonotactic constraints in Kurdish*

Based on classroom observation of frequent pronunciation errors of the author's Kurdish-speaking students in North Cyprus, the researcher was led to believe that there might be certain phonotactic constraints in Kurdish in the coda position which cause difficulty for Kurdish EFL learners in pronouncing English CCs. Thus, some Kurdish lexical items were analyzed and a few constraints were discovered in the coda position, as displayed in Table 1.

Table 1  
*Coda Cluster Constraints in Kurdish*

#	Consonants that cannot co-occur in the final position
1	Plosives + Fricatives (as in the English words <b>books</b> , <b>tests</b> , <b>screams</b> )
2	Two plosives (i.e., plosives p, k, t, d) cannot co-occur in word or syllable final position (e.g., <b>booked</b> [kt], <b>looked</b> [kt], <b>stopped</b> [pt], <b>screamed</b> [md])
3	An affricate plus a plosive: <b>changed</b> [dʒd], <b>arranged</b> [dʒd]
4	Two fricatives: <b>months</b> [s or ðz], <b>mouths</b> [s or ðz]

**Key:**

- Plosive** A consonant in whose production there is an initial complete closure of the passage of air in the vocal tract followed by an abrupt release of the blocked air with some degree of explosive noise.
- Affricate** A consonant whose articulation involves an initial complete closure followed by a comparatively slow release with perceptible friction noise.
- Fricative** A consonant produced by narrowing the two articulators thereby allowing the airstream to escape with friction (cf. Roach, 2014; Trask, 1996).

Therefore, it can be concluded that the phonotactic rules of Kurdish determine which consonants can occupy the coda position. For instance, while a fricative like /s/ can combine with a final plosive like /k/ (e.g., /task/ ‘narrow’, and /trist/ ‘shine’) the reverse sequence is not permissible in Kurdish. In other words, plosives+s cannot combine to form a final consonant cluster.

In order to support this observation, the researcher sent an email to his former MA students and asked them to provide him with five Kurdish words for each of the above CCs. As anticipated, they responded that they could not find a single example for the above clusters. In contrast to Kurdish, these clusters are quite frequent in English. Hence, it is quite natural for Kurdish EFL learners to encounter difficulties in pronouncing the above English CCs and try to simplify them by inserting a vowel between the two consonants. This learning strategy, known as *repair strategy*, is technically referred to as *vocalic epenthesis or anaptyxis* (i.e., inserting a vowel in the middle of the cluster, as in /kʊkʌd/ ‘cooked’, instead of /kʊkt/). Thus, syllabification is operationally defined here as the simplification of initial or final CCs through the phonological processes of *epenthesis* (as defined above) or *prothesis* (i.e., inserting a vowel at the beginning of the cluster, as in /estjudənt/ ‘student’, instead of /stjudənt/). Sometimes both processes are at work in the pronunciation of some difficult CCs by EFL learners, as in [e]st[e]reet, instead of /strit/ ‘street’.

Based on the foregoing discussion, this study seeks to answer the following research questions:

1. What are the most difficult English consonant clusters for Kurdish EFL learners?
2. What repair strategies do Kurdish EFL learners employ to facilitate the pronunciation of complex syllable structures of English?

The significance of the present study lies in the fact that published research on syllabification errors of Iraqi Kurdish EFL learners is scarce. Therefore, the findings of the present study may make some contribution to this field of investigation

## Methodology

### *Participants*

Eighteen graduate Iraqi Kurdish EFL learners, studying at a private university in Northern Cyprus, volunteered to participate in this study. The participants were all male adult students, ranged in age between 25 and 39, who had learned English solely in a classroom EFL context. None of the participants had the opportunity to travel to English-speaking countries. Therefore, they represent typical Iraqi Kurdish EFL learners whose exposure to English is restricted to limited classroom instruction. It needs to be added that Kurdish students who had had extra-tuition (e.g., having regular contacts with native speakers of English) before starting their graduate program were excluded from consideration as they did not represent the mainstream Kurdish EFL learners.

### *Instrumentation*

Two instruments were used for collecting data in the present study: classroom observation, and a pronunciation test. Initially, difficulties of Kurdish students in the pronunciation of English consonant clusters were identified through their oral presentations and classroom performances. Then, a pronunciation test was developed which consisted of a short paragraph, a set of individual sentences, and a word list (or isolated words) containing consonant clusters. However, since classroom observation revealed that coda clusters consisting of a plosive+s and a plosive+t/d have high frequency of occurrence in the speech of Kurdish speakers of English, the proportion of items including these clusters was higher than other clusters. The fact that the test items reflected types of pronunciation errors observed in the participants' oral performance in class adds to the validity of the test. Moreover, most of the key words were simple and familiar words, such as books, cooks, cakes, foods, codes. It needs to be remembered that in addition to final consonant clusters, the test included 15 words with initial consonant clusters, such as *students, streets, stressed, speaks, and screams*.

### *Procedure*

The researcher first created a friendly rapport with the participants. Then, in order to reduce the students' anxiety, they were assured that the pronunciation test would not affect their grades, and their performance in the test would not be shared with anybody else except for research purposes, with the participants' identity remaining anonymous. Next, they were asked to take a look at the pronunciation items and read them aloud while being audio-recorded. The recordings were done individually in a friendly atmosphere.

After the data were collected, the researcher listened to each recording carefully a few times and transcribed the problematic consonant clusters, based on his phonetic training and teaching experience. However, to ensure more reliability, two educated native speakers of English were asked to listen to the recordings and rate the students' mispronunciations. Table 2 below displays the results of the inter-rater reliability.

Table 2  
*Pearson Correlation of Inter-rater Reliability*

	Researcher	Rater 1	Rater 2
	–		
	.987**	–	
	.988**	.976**	–

\*\* p < 0.01

As illustrated in Table 2, there is a strong positive correlation between the researcher's assessment and that of the two raters, i.e., the correlation is statistically significant at 0.01 level. This high correlation seems to be due to the fact that the participants' pronunciation errors were obvious and easy to identify by the raters (e.g., book[**ɪz**] for *books*), hence the Pearson *r* is very close to one ( $r=.987$  and  $r=.988$ ). Thus, it can be concluded that the researcher's assessment of the participants' pronunciation errors is reliable.

Finally, frequencies and percentages of mispronunciations were obtained, the results of which are presented below.

## Results and discussion

With regard to the first research question, concerning the most difficult English consonant clusters for Kurdish EFL learners, classroom observation revealed that Kurdish learners in general do not face any difficulty in the pronunciation of initial consonant clusters of English. Rather, their main problem is in the pronunciation of final consonant clusters, as displayed in Table 3.

Table 3  
*Problematic Final Consonant Clusters*

Plosives /p, b, t, d, k, g/ plus /s/
Plosives /p, b, t, d, k, g/ plus /t/ and /d/
The affricate /dʒ/ plus /t/
Dental fricatives /tʃ, ð/ plus /s/

(For the description of the above terms, see Table 1)

As mentioned earlier, since the participants' native language does not allow such combinations, they simplify the English complex CCs by inserting a vowel between them, as illustrated in Table 4.

Table 4  
*Insertion of Epenthetic Vowel by Iraqi Kurdish EFL Learners*

English Words	Correct Pronunciation	Students' Mispronunciation
books	/bʊks/	/bʊktɪz/
Cooks	/kʊks/	/kʊktɪz/
sounds	/saundz/	/saundɪz/
words	/wədz/	/wədtɪz/
looked	/lʊkt/	/lʊktɪd/
talked	/tɔkt/	/tɔktɪd/
helped	/helpt/	/helpɪd/
screamed	/skrɪmd/	/skrɪmɪd/
months	/mʌn s/ or /mʌndz	/mʌn ɪz/
clothes	/kləʊðz/	/kləʊðɪz/
changed	/tʃeɪndʒd/	/tʃeɪndʒɪd/
arranged	/əreɪndʒd/	/əreɪndʒɪd/

Accordingly, words and sentences containing the above combinations were included in the pronunciation test. Then, the percentages of errors in the use of initial and final consonant clusters were computed in order to compare the participants' performance in these two positions. Table 5 illustrates the results.

Table 5  
*Percentages of Initial and Final Consonant Cluster Errors*

Participants' Code No.	Initial Position	Final Position
1	0.00	58.33
2	5.00	75.00
3	15.00	75.00
4	5.00	83.33
5	5.00	72.92
6	0.00	64.58
7	5.00	56.25
8	10.00	66.67
9	5.00	95.83
10	5.00	87.50
11	10.00	95.83
12	5.00	85.42
13	5.00	93.75
14	5.00	91.67
15	0.00	66.67
16	0.00	77.08
17	10.00	79.17
18	5.00	54.17
Total %	5.56	76.85

As Table 5 shows, the percentage of errors in the initial or onset position is rather low in spite of the fact that a good proportion of items in the pronunciation test contained initial CCs. In fact, the percentage of errors in this position is next to nothing (5.56), compared to the high percentage of errors in the final or coda position (76.85). Figure 1 below shows the comparison of syllabification errors in the onset and coda positions.

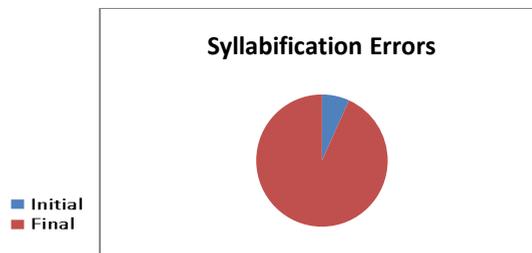


Figure 1. Onset versus coda syllabification errors

This result confirms the researcher's classroom observation that Kurdish EFL learners do not face serious difficulties in the pronunciation of initial CCs. Similar studies conducted on EFL learners' pronunciation problems with different linguistic backgrounds show opposing results. For instance, the results of Jabbari and Samavarchi's (2011) study indicate that their participants (native speakers of Persian) simplified the initial consonant clusters by employing epenthesis. The authors attributed this to negative transfer from Persian as this language does not allow initial consonant clusters. Similarly, Chang (2004) found that Chinese learners encounter problems with initial CCs due to interference from their native language as Chinese syllable structure allows only one consonant in the onset position, compared to three consonants in this position in English. Participants in Chang's study used both epenthesis (inserting a vowel between consonants) and omission of the second element of the cluster as simplification strategies. In an interesting study on Indian English, Wiltshire (2005) found out that when the first language of Indian learners of English as a second language does not allow consonant clusters (languages such as Angami, Ao, and Mizo) they use deletion as a simplification strategy more often than speakers of the L1s that do allow consonant clusters (e.g., Gujarati, and Hindi). All of these studies reflect the influence of the learners' L1 in the acquisition of L2 pronunciation.

As mentioned earlier, the results of the present study indicated that Kurdish EFL learners do not exhibit difficulties in pronouncing English initial consonant clusters. This may be due to the fact that Kurdish, unlike Persian, Chinese, and some Indian languages, allows two consonants in the onset position.

Now we may turn to a more detailed analysis of problematic final consonant clusters. As shown in Table 6, cases of syllabification errors (i.e., vocalic epenthesis) in the data were identified and percentages of such errors were obtained.

Table 6  
*Percentages of Pronunciation Errors in Syllable Final Position*

Type of Error	%
Plosives +[ɾz]	74.18
Plosives +[ɾd]	80.25
Fricative+[ɾz]	87.04
Affricate+[ɾd]	91.67

As can be seen, the percentage of all types of errors in syllable final position is very high. These are graphically illustrated in Figure 2 below.

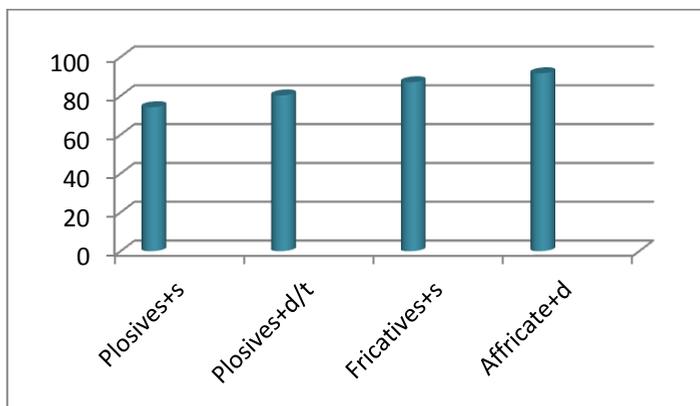


Figure 2. Types of final consonant cluster errors

The high percentage of errors in the coda position confirms classroom observation that Kurdish EFL learners have serious problems with the pronunciation of final consonant clusters due to phonotactic constraints in Kurdish. These findings are in line with those of other researchers including Berg (2001), Broselow (1983, 1988), Chang (2004), Eckman and Iverson (1994), Lee et al. (2002), Lin (2001a, 2001b), and Jabbari and Samavarchi (2011). In all of these studies, the influence of mother tongue as a cause of learners' pronunciation errors has been confirmed.

### Conclusions and Implications

The aim of this study was to explore the difficulties of adult Kurdish EFL learners in the pronunciation of English consonant clusters. The findings point to the fact that Kurdish EFL learners employ vocalic epenthesis as a repair strategy when faced with difficult English CCs in syllable or word final position. This seems to be mainly due to the influence of the mother tongue as Kurdish phonotactics does not allow many English CCs. Other factors such as lack of sufficient exposure to the TL should also be acknowledged. Moreover, since all of the participants were adult EFL learners it is safe to assume that their errors in the use of English CCs have been fossilized. Therefore, pedagogically speaking, pronunciation errors should be dealt with during early stages of L2 acquisition, when students are younger and have more vocal tract flexibility for acquiring the pronunciation of the TL. In this regard, the role of modeling is crucial in pronunciation training. In informal interviews and discussions with some of the participants, they reported that most of their EFL teachers during their primary and secondary education had pronunciation problems. It appears that those teachers have not received sufficient pronunciation training. Consequently, they have transferred their own errors to their students through wrong modeling (hence teacher-induced errors), which has led to fossilization, i.e., permanent features in the speech of adult EFL learners. (For more on fossilization, see Han, 2012; Han & Selinker, 2005; and Long, 2005).

In terms of pedagogy, since pronunciation, as an integrated element of speaking and listening, is crucially important in communication it should be included in EFL programs, though not necessarily as a separate module; rather, it should be incorporated into communicative activities. In general, the goal of pronunciation teaching should not necessarily be native-like pronunciation, which is normally not attainable in most EFL contexts; rather, the objective should be functional

intelligibility in the target language (TL). This is crucially important because if learners do not develop a satisfactory command of TL pronunciation they may not be able to hear the spoken language well, in which case “they are cut off from the language, [and] if they cannot be understood easily, they are cut off from conversation with native speakers” (Gilbert, 1984, p. 1). Of course, Gilbert’s quotation should be amended to include non-native speakers of English as well, since nowadays English is used more widely by non-native than native speakers of English (Crystal, 2008; Graddol, 2006; Jenkins, 2006; Kachru, 1992). As mentioned earlier, the results of the present study confirm the findings of previous research in the literature that most EFL learners experience difficulties in perceiving and producing pronunciation features of English because of the influence of the mother tongue (e.g., Altenberg, 2005; Broselow, 1983, 1988; Chang, 2004; Jabbari & Samavarchi, 2011; Lee et al. 2002; Lin, 2001a, 2001b). Therefore, it is quite natural for second language learners whose native language has a simple syllable structure to have the tendency to simplify the elaborate and complex consonant cluster system of English through the strategies of deletion or epenthesis. This is especially true in the case of adult EFL learners.

### Limitations of the study and suggestions for further research

The following limitations can potentially be the subject of future research:

1. The results of the present study should be interpreted with caution since the sample size was small owing to convenient sampling. Research conducted with a more representative sample may yield different outcomes.
2. This study was only concerned with students’ errors in the use of difficult CCs of English. Other pronunciation problems of Kurdish-speaking learners of English, which include the following, were not investigated:
  - a. Segmental problems (e.g., pronunciation problems of individual phonemes namely vowels and consonants)
  - b. Suprasegmental problems (i.e., problems related to stress, intonation, pitch, and rhythm)
  - c. Morpho-phonological problems (e.g., pronunciation of plural morpheme)
3. The participants in the present study were all adult EFL learners. Pronunciation problems of younger students may yield different results.
4. This study was restricted to speakers of Sorani Kurdish. Speakers of other varieties of Kurdish may have different pronunciation problems.

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**Mohammad Hossein Keshavarz** is currently professor of Applied Linguistics at Girne American University in Northern Cyprus. He has published in a number of national and international journals including *Language in Society*, *International Journal of Applied Linguistics*, *Journal of Psycholinguistic Research*, *International Journal of Bilingualism*, *Communication Disorders Quarterly*, and *International Journal of the Sociology of Language*. His research interests include language acquisition, sociolinguistics, and pronunciation.