A Study of Consonant Cluster Phonotactics of English Borrowed Words in Urdu Language

Muhammad Shaban Shoukat, Muhammad Bilal, Maria Fatima Dogar
University of the Punjab
{s.shoukat7, m.bilal4767}@gmail.com, maria.ier@pu.edu.pk

Abstract

Whenever a word is borrowed it is resyllabified according to the phonology of the language it is adopted. This research paper identifies resyllabification and discusses the phonotactics of the resyllabification of the consonant clusters in the English borrowed words of Urdu language. For this purpose, words having consonant clusters were selected from Urdu dictionary. All existing CC combinations at onset and coda positions were determined and most common word for each CC cluster combination was selected. The stimulus for data collection contained the target combination word in a sentence. The data was collected from respondents with different gender, age and educational background from Lahore, Pakistan. The data was analyzed by three researchers and PRAAT was used wherever the researchers found any confusion. It is found that epenthesis occurs at onset position except when the consonants in the consonant clusters have same place of articulation and /j/ comes at post-initial position in 2-cluster combination.

1. Introduction

English has developed an important part in communication throughout the world. In Pakistan, English is learnt and spoken as a second language as communication in English is a basic need of majority of jobs in Pakistan [13]. Due to this importance of English language, Urdu language has borrowed many words from English.

Every language has its own phonological rules. English follows its own phonotactic rules and stress patterns while Urdu has its own. In accordance to rhythm, English is stress-timed language [14]. The stress pattern of Urdu and English are also different. Rehman (2015) in his book points out some interference of L1 on second language which is English in case of Pakistan. He argues that the difference can be seen at two levels. One is the segmental features and the other at non-segmental features.

In segmental features, we see the replacement of certain sounds with others like the replacement of dental fricatives /θ/ and /δ/ with /th/ and /d/ or the non aspiration of /p,t,k/. in case of non-segmental features, we see a difference of rhythm in Pakistani English as language in south Asian countries are syllable-timed while English is stress-timed language [13]. This difference leads us to the conclusion that English is different from Urdu on Phonological grounds. Thus the phonotactic rules for Urdu are also different from English. Syllable templates of Urdu as described by Nazar (2002) are different from that of English. Urdu language has only one consonant cluster at the coda position [11] while in English, consonant clusters can be seen both at onset and coda positions [14]. As the phonotactics rules of every language are different, this difference might have effect on the pronunciation of a second language by a non-native speaker. The current study was aimed at discussing the study of consonant cluster phonotactics of English borrowed words in Urdu language. The study is specific with the resyllabification of consonant clusters that occurs due to borrowing of English words in Urdu language.

2. Literature Review

Whenever cultures come in contact with each other, they affect the languages which are seen by the phenomenon of borrowing [7].

2.1. Borrowing

Borrowing is the process in which linguistic items are imported from one linguistic system to another. The history of borrowing can be traced back to the work of Haugen in 1950. Haugen has defined borrowing (as cited in Hoffer, 2002) as the "the attempted reproduction in one language of the patterns previously found in another". The types of borrowing can be explained with reference to original pattern or model. If the borrowed item is similar to the model, it is termed as import. While if it is an inadequate version of the model i.e. the original speaker would not recognize the borrowed term, it is substitution. Borrowing can be discussed further by the terms used to express borrowing. The terms used in

borrowing relate to the process rather than the result (Hoffer, 2002).
Hoffer (2005) citing Hockett (1958) defines these terms as follows:
Loanwords: In this the speaker may adopt the idea or term and the source language for each.
Loanshifts: In this the native word is used in another linguistic system with new meaning.
Loan-transation: "The native language uses an item-for-item native version of the original".
Loan-blends: Loan-blends consist of two elements. One element is a loanword and the other element is from native language [8]

2.2. Resyllabification

Both English and Urdu possess different syllable structure and phonotactics. Like all other languages, Urdu also imposes certain restrictions on the syllabification of borrowed words. Thus these English words have become part of Urdu language after undergoing the process of resyllabification [1].
However Trask (1996) defines resyllabification as "a process which applies during a derivation to move segments from one syllable to another" [15]. Usman, Farooq, & Masood (200) in their article concludes that words of English when spoken in Urdu, they undergo resyllabification and are resyllabified according to the templates and phonological rules of Urdu.
English and Urdu contain different syllable patterns [1].

2.3. Syllable

Syllables are considered to be the basic and an important phonological unit. The definitions of syllable seem ambiguous but a native speaker can easily identify the number of syllables in a word by just tapping the fingers. This shows the importance of the syllable in the rhythm of speech. Roach defines syllable in two ways. He defines a syllable phonetically and phonologically. On phonetic grounds, syllables are defined as the sounds having a centre with little or no obstruction to the flow of air and which have relatively loud sound. The other way of defining a syllable is on phonological grounds.
By phonological grounds we mean as to how a syllable is defined with respect to neighboring sounds. This takes the review of looking at the possible combinations of sounds in the production of a syllable. The study of the possible combination of phonemes in a language is termed as phonotactics. This involves the study of what can come at the beginning of a syllable, at the centre and at the end of the study of how many entities can come in combination to form a part of syllable [14]. The centre of the syllable is said to be loud and in other words more prominent than other sounds in the syllable. This is also termed as the theory of prominence which points out that some sounds in an utterance are more prominent or sonorous than other sounds. This forms the sonority hierarchy of sounds [4]. Trask also defines syllable by chest-pulse theory. According to which syllable is defined as an utterance produced as a result of single respiratory movement or a single opening and closing of respiratory tract [15]. A syllable is also defines as a smallest unit of speech which consists of a single vowel or can exist in combination with consonants [9].

2.4. Structure of Syllable

The syllable can thus have an optional consonant at the initial and final position with a mandatory vowel at the centre of the syllable. This gives vowel a CVC structure. The division of syllable that is now usually followed is the division of syllable into onset and rhyme, with rhyme further divided into nucleus and a coda as shown in figure 1 [15]. The following terminology is widely used:
Onset: the opening segment of a syllable, coda: the closing segment of a syllable and nucleus: the central segment of a syllable [5]. The structure of syllable can thus be drawn as follows:

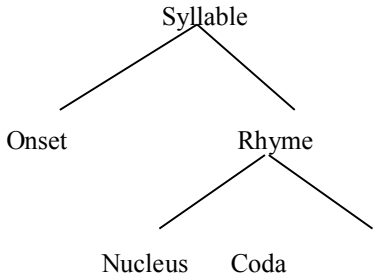

Figure 1: Syllable Structure

(Roach, 2003)

2.5 Syllable structure of English

English follows the same syllable structure. It differs on the basis of the different phonotactics rules.
Roach (2003) discusses the structure of syllable of English by starting with what comes at the onset of English words. According to roach, if a word start with a vowel, we can say that the word has zero onsets. And if the word has a single consonant at the start of the syllable or we can say that if the word has one consonant before the peak of the syllable, the consonant in the onset position will be referred as initial consonant.
In case of a consonant cluster having two consonants (CC) at the onset position, two sorts of combinations are

seen in English. One combination includes the combination of s with a small set of words /p, t, k, f, m, n/. The position of the s is named as pre-initial consonant position and the other words are said to be at the initial consonant position. The other sort of combination is when we see words like /pleɪ/, /traɪ/. These types of words begins with a set of about fifteen consonants followed by a small set of words /l, r, w, j / which are referred as post initial consonants.

In case of three consonant clusters, we have a distinct number of consonants that can come at the three positions; **s** at the pre-initial position, **p, t, k** at the initial consonant position and **l, r, w, j** at the post-initial consonant position [14].

A cluster of four consonants is seen at the end of the syllable. If we have no consonant at the coda position, we can say that there is a zero-coda. If there is just one consonant after the vowel at the end of the syllable, we call that consonant as final consonant. All consonant phonemes can take the position of the final consonant position except **h, r, w, j.** With a consonant cluster of two consonant at the end of the syllable we can have two combinations:

a) Pre-final consonant + final consonant
b) Final consonant + post-final consonant

The pre-final consonant position can be taken by a small set of consonants: **m, n, ŋ, l, s.** The examples of words having pre-final and final combination are /**bʌmp/, /bent/, /bænk/** etc. Similarly post-final position can be taken by the consonants: **s, z, t, d, θ.** The examples of final and post-final combination are /**bets/, /bedz/, bægd/** etc. we can have a combination of four consonants at the end of the syllable. With a combination of three consonants, we can have the following combinations:

a) Pre-final + final + post-final-consonant
b) Final + post-final 1 + post-final 2

Pre-final, final and post-final combination is seen in the following words: helped /**helpt/,** banks /**bænks/.** Post-final 1 and post-final 2 is found in the words: fifths /**fɪfθs/,** next /**nekst/.** With a consonant cluster of four consonants, we can have the following combinations:

a) Pre-final + final + post-final 1 + post-final 2
b) Final + post-final 1 + post-final 2 + post-final 3

The examples of (a) are seen in twelfths /**twelfθs/** prompts **/prɒmptd/** while (b) is found in sixths **/sɪksθs/** and texts **/teksts/.** [14]

2.6. Syllable structure of Urdu

Urdu is the national language of Pakistan and is spoken by almost 104 million people all around the world [6]. The vocabulary of Urdu is the result of the absorption of words and phrases from other languages and Urdu easily modify the words according to its own grammar [11]. The modification of these words is done by the process of resyllabification. For taking into account the process of resyllabification, we first need to study the syllable structure of Urdu language. Ghazali (2002) in his article writes that there is no as such significant research on the phonology of the Urdu language. However considerable work has been done on the syllable templates of Urdu. Nazar (2002) lists ten syllable templates that are found in Urdu language:

1. CVV
2. CVC
3. CVVC
4. CV
5. CVCC
6. VV
7. VVC
8. CVVCC
9. V
10. VCC

He also writes that Urdu uses both long and short vowels. He uses VV for a long vowel and V for a short vowel in the syllable. He, therefore, divides the above mentioned syllable templates into two groups based upon the presence of the vowel present.

CVV	CV
CVVC	CVC
CVVCC	CVCC
VV	V
VVC	VC
	VCC

Urdu language has a simple onset having a single consonant at the onset position. The presence of a short vowel at the start of the syllable is less favorable. At the start of the syllable, mostly long vowel exists. He also writes that Urdu also restricts a short vowel at the end of the word. The most popular templates in Urdu are CVV and CVC. At coda position, Urdu language has a consonant cluster of two consonants occurring together. Even this syllable template exists a little in Urdu language. The frequency mentioned by Nazar (2002) for the syllable template CVCC and CVVCC is 3.2 and 0.3 percent respectively which is much less as compared to the frequency percentage of the syllable templates CVV and CVC which is 39 and 20 percent respectively. Nazar (2002) declares the template CVVCC as super-super-heavy syllable. Nazar (2002) has worked out just the syllable templates of Urdu language [12].

Ghazali (2002) also lists eleven syllable templates of Urdu in his article 'Urdu Syllable Templates':

1. CV
2. CVC

3. CVCC
4. CVV
5. CVVC
6. CVVCC
7. V
8. VC
9. VCC
10. VV
11. VVC

He however discusses that Urdu only has six syllable templates. The other syllable templates are derived ones. He further elaborates that there is no as such restriction on the consonants that can occur in the template CV however in templates if the consonant in the onset and coda position can be same if they belong to the set /t̪ /, /t /, /l/, /s/, /b/, /m/, /p/, /tʃ/. he further elaborates that by the reference of Hussain (1997) that when there are two consonant in a cluster, the first consonants is limited to voiceless fricatives or nasals and second consonant in that cluster will be limited to stops. Ghazali (2002) also enlists the consonants that can take the position of the first consonant in that consonant cluster: / l, z, r b, k, t̪ /. He also explains that CVV is the most frequent used syllable template used in Urdu. The possible reason that he gives to the question as to why CVV is more common as compared to CVC despite the fact that CVC is a complete template is the fact that saying CVV is easier as compared to the template CVC. In his conclusion, Ghazali (2002) argues that Urdu has only has six fundamental syllable templates (CV, CVC, CVV, CVCC, CVVC, CVVCC). Among these templates, CVV is most frequently spoken (37%) while template CVVCC is least (0.4%) used [6].

3. Methodology

The current investigation deals with the borrowed words having consonant clusters. A qualitative research was considered more suitable as a research design. The research was conducted in Lahore, Punjab where mostly Urdu is spoken as a native language and English is spoken as a second language. Owing to this importance of the language, it has affected the lexicon of Urdu language. A number of words from English language have become part of the lexicon of Urdu language. The population of the research was all those speakers who speak Urdu as their native language and learn English as second language. The sample was selected on the basis of the convenience in University of the Punjab. People from different fields of education were selected. On an average, data was collected from 8 students belonging to different educational background and four respondents were selected from the clerical staff of different institutes who have very less chance of speaking English as a second language.

As in qualitative research the main aim of data collection is saturation. After collecting data from this small sample, it was seen that there was no difference of results i.e. saturation was reached. The data collected from all the respondents was same. Words were selected from Urdu Dictionary "firoz-ul-lughat Jamiya" by Feroz Sons and a daily Urdu newspaper "Express". From all the borrowed words, the borrowed words having consonant clusters were selected for the study. These borrowed words were selected on the assumption that place of articulation has any role on epenthesis in the consonant clusters. Each combination of consonant cluster was selected according to the manner of articulation. For pre-initial and initial position, combination of /s/ with every possible phoneme was selected. In case of initial and post-initial position, first the combination of voiced and voiceless plosives were seen with /l, r, w, j/ and one word for each combination was selected. The same was done for all manner of articulation i.e. fricatives, affricatives, nasals, lateral approximants and approximants.

The possible combinations of voiced and voiceless consonants were seen with post-initial consonants /l, r, w, j/ and one word having one of the combination was selected. The same was done at the **coda** position. After collecting these words, Urdu sentences were made using these words to avoid any interference of the English language during the pronunciation of these words. A closed room was selected for the recordings of the respondents to avoid any disturbance of noise. The respondents were asked to read the phrases thrice and they were recorded for the analysis of the pronunciation of the selected words. The pronunciation of the selected words was analyzed by three Urdu speaker researchers. In case of confusion PRAAT was used in analyzing any word that created confusion during the analysis of the results.

4. Analysis

The results of the research can be divided in to four groups:

i. Consonant clusters having different place of articulation:

The words having two consonants in consonant clusters at onset position showed epenthesis between them. The words that showed resyllabification in consonant clusters are speech, skirt, plaster, smuggle, sweeper, brown, and glass. The resyllabified pronunciation of the above mentioned words are: /səpiːtʃ/, /səkɜːt/, /səmʌg(ə)l/, /səwiːpər/, /bəraʊn/ and /gəlɑːs/ respectively. In case of "skirt" out of twelve

respondents eight respondents inserted a vowel between /s/ and /k/ and pronounced the word as /səkərt/.

When the consonant cluster has three consonants in it, consonants having different place of articulation showed epenthesis in the first two consonants and a syllable break after them. The words in the data that showed this phenomenon are spring /səp.rɪŋ/, screen /sək.ri:n/, squash /sək.wɒʃ/.

ii. Consonant clusters at onset position having same place of articulation:

The words having consonant clusters in which the consonants shared the same place of articulation did not show epenthesis or resyllabification in them. This phenomenon was specific to only alveolar consonants. The words selected that showed these results are: staff, snow, slow, string. All the respondents pronounced these words without any epenthesis.

iii. Consonant clusters at onset position having /j/ at post-initial position:

The words having /j/ at post-initial position as in tube, duty, music, news, and lubrication also did not show any epenthesis or resyllabification in consonant clusters. All the respondents pronounced these words without any epenthesis.

iv. Consonant clusters at coda position:

The words having two or three consonant in consonant cluster at coda position did not show any epenthesis in coda position consonant clusters. The words that showed this result are: jump, tent, belt, risk, brand, gold, golf, conference, games, lunch, gift, script, tax, product, thanks, accounts, next, funds, torch. In all these words the consonant cluster structure remained intact.

Only one combination out of the selected words showed epenthesis at coda position i.e. /lb/. The word selected for this combination was **bulb** which all respondents pronounced as /bʌləb/. This strange result requires a detailed study.

5. Discussions

The research was started with the hypothesis that manner of articulation plays a role in the resyllabification of the consonant clusters. After collecting the data, the data showed that manner of articulation has no relation with resyllabification in consonant clusters.

The comparison of syllable structure of Urdu and English shows that Urdu also has a consonant cluster at coda like English. By looking at the results of the data during the research, it was seen that at coda position, a native Urdu speaker does not change the structure of the consonant cluster at coda position. The structure of the coda in the syllable of English borrowed words remains intact i.e. no epenthesis is seen at coda position in the English borrowed words in Urdu language. However the results show one exception in the form of epenthesis at coda position in "bulb" which all the respondents pronounced as /bʌləb/. This result requires a detailed study to find out the reason behind the epenthesis which was absent in all combinations in words selected according to manner of articulation.

However the research shows that epenthesis takes place at onset position with some exceptions. The consonants in the consonant cluster having same place of articulation did not show epenthesis in the consonant clusters as was seen in staff, snow, slow, street, and string. All these words have consonant clusters at onset position having consonants that have same place of articulation. It can be said that when consonants in a consonant cluster have same place of articulation, the tongue has to put less effort if the production of those sounds. We then see no insertion of vowel between consonant sounds that share same place of articulation.

Another interesting finding is seen when /j/ comes at post-initial position, no epenthesis is seen. This research is in contrast with the research conducted by Ahmed, Anwar, & Iqbal (2017) where they gave the result that an Urdu speaker always adds a vowel between consonant clusters at onset postion [1].

6. Conclusion

The findings of the research are:

1. The analysis of the words shows that epenthesis, which is the major reason of resyllabification in consonant clusters, is seen at onset position e.g. in case of words spring, skirt, shrink, etc. but in case of consonant clusters at coda position no epenthesis is seen like in words jump, belt, brown, glass, golf, games, tax etc except when the consonant clusters contains consonants /lb/ which all respondents pronounced as /ləb/ as the word used during the research 'bulb'. This strange result requires a detailed study.
2. In case of resyllabification at onset position, it is found that
   - Whenever the consonants in the consonant clusters have same place of articulation which is specific to alveolar position we see no epenthesis as was seen in words street, slow, staff, smuggle.
   - The other combination where we see no epenthesis is the combination of sounds with /j/. Whenever /j/ comes at post-initial position no epenthesis is seen. This phenomenon was seen in words news, duty, music, view, and human.

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