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Syllabic Structure of English Borrowings in Urdu

Syllabification principles play a significant role in the phonological patterns of any language. This paper aims to analyze the performance of maximum onset principle and sonority sequence principle in organizing the syllabic structure of English borrowed words. The stability of the principles in Urdu syllabification is checked by applying two principles on borrowed words one by one and then by comparing with original syllabic structure of the words by native Urdu speakers after applying epenthesis rule. Different situations through which the violation of the principles is required are also explained. The syllabic structures that undergo the process of observance and violation of the principles are extracted by the researchers. The present study finds preference of sonority sequence principle over maximum onset principle and suggests sonority sequence principle, the suitable method for Urdu syllabification.

Key Words: Syllabic Structure; English borrowings; Urdu syllabification.

1. INTRODUCTION

Syllabification is an analytical process of dividing a word into its minimal constituents (Bartlett et al., 2009). The phonological system of any language mainly depends on syllabification. According to Bartlett et al., (2009) the rules of syllabification are different in every language and the borrowed words are modified according to the phonological rules of the recipient language.

Borrowed words in Urdu are modified according to the Urdu phonological rules. Urdu is very much influenced by Persian, Arabic, Portuguese, English and some local languages of Indian subcontinent (Saxena, 1954). Many English borrowings have become the part of Urdu through re-syllabification.

In the process of syllabifying, we need syllabification principles that help to recognize the boundaries of the syllables on the basis of which a word is syllabified. These principles actually identify the location where the syllables are broken to make different segments of the word. Every language follows its own principle of syllabification to syllabify the words (Hays, 2009). Like other languages Urdu also has its own syllabification rules and restriction which it applies to syllabify the Urdu words and also to modify the structure of the words which have been borrowed from other languages. It has its own syllable templates and variant phonotactic constraints on the basis of which the syllabic structure of the words is constructed. So for this reason its choice of syllabification principle is also different from other languages. Each syllabification principle contains different criteria for the organization of the syllabic structure of the words. Two syllabification principles have been selected for analyzing the syllabic structure of the words. In this paper, the researchers will analyze the performance of Maximum Onset principle and Sonority Sequence principle in Urdu syllabification while dealing with English borrowed words. By applying these algorithms on the data it will be checked which principle the Urdu speakers prefer to organize the syllabic structure of the borrowed words. For this purpose, firstly Urdu speakers syllabified the words then the words were again transcribed by applying two principles to check the performances of the two principles in determining the syllabic boundaries of the words. The performance of the two principles in the Urdu language has been examined by applying the two principles on the data one by one and on the basis of this examination the stability of these principles is checked and then presented in the results of the study.

1.1 Research Questions

- 1. Which principle is preferred by Urdu speakers to organize the syllabic structure of English borrowed words?
- 2. Why sonority sequence principle is preferred over maximum onset principle?
- 3. How is sonority sequence principle suitable for Urdu syllabification?

2. LITERATURE REVIEW

In the process of syllabification a word is divided into its segments by identifying the syllabic boundaries of that specific word (Bartlett et al., 2009). To identify these syllabic boundaries in the

process of syllabification is a difficult process, so different principles of syllabification have been formulated to identify the syllabic boundaries in a word on the basis of which a word is syllabified. These principles decide where the boundaries of a syllable fall. The linguists gave these principles another name that is 'syllabification algorithms''. A number of syllabification principles have been introduced by different linguists on the basis of which languages organize the syllabic structure of the words. Some common and well known syllabification principles used by different languages are maximum onset principle, sonority sequence principle, maximum coda principle, templatic syllabification, and the legality principle of syllabification. The description of these principles is given below:

2.1 Maximal Onset Principle (MOP)

This principle suggests that maximum consonants are allowed in the onset position of the word and leaving consonants only for the word final coda position to syllabify the word (Goldsmith, 1990). A syllable can be extended by putting maximum consonants in the onset position without allowing consonants in the coda position except for word final coda position (Bartlett et al., 2009). This principle states that if a consonantal segment relates with both following onset and previous coda position of the word then it is preferred in the onset position of the syllable rather than the coda of the preceding syllable. The alternative name given to this principle is 'coda minimization principle' because this principle gives preference to maximization of onsets and codas are less preferred (Szigetvari, 2013).

2.2 Sonority Sequence Principle (SSP)

The syllabification of the word is done on the basis of sonority of speech sounds. Sonority is a scalar property of sounds. The sonority of a sound is judged by the size of chamber through which air passes during the production of speech sounds (Goldsmith, 1990). It is important to tell about the sound's sonority which are loudness, pitch, and duration (Bartlett et al., 2009). The sounds that have high pitch and more loudness are more sonorous than those that contain less pitch and loudness. According to SSP the sonority rises towards the nucleus and falls in the direction of coda (Kenstowicz, 1994). In a syllable the nucleus has the highest sonority than its neighboring consonants. In case of consonant clusters the following consonant will be more sonorous that the proceeding one in onset position but in case of consonants cluster appeared in coda position the preceding consonant will be more sonorous that the following one. In two syllabic words the onset should be less sonorant than the preceding coda. Szigetvari (2013) has presented a standard Sonority hierarchy on the basis of which the speech sounds are distinguished. He also mentioned the speech sounds showing their sonority level.

Index of sonority		Speech sounds	
Most sonorous	9	Low vowels $(/a/,/a/,/b/)$	
↑	8	Mid vowels (/ə/,/e/,/o/,/ ϵ /)	
	7	High vowels or glides $(/i/,/j/,/u/,/w/)$	
	6	Rhotics (/r/,/ſ/)	
	5	Laterals (/l/)	
	4	Nasals (/m/,/ŋ/)	
	3	Voiced fricatives $(/v/,/z/,/3/)$	
↓	2	Voiceless fricatives (/f/,/s/,/ $\int/$,/ $\theta/$,/x/)	
Less sonorous	1	Voiced plosives (/b/,/d/,/g/)	
	0	Voiceless plosives (/p/,/t/,/k/)	

Table 2.1: Hierarchy of Sonority Sedu	ence Principle
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2.3 Maximal Coda Principle (MCP)

This principle suggests that maximum consonants are permitted in coda position and consonant is not allowed in onset position except for the initial onset position of the word (Akram, 2002). If a word has a consonant relating with both following onset and preceding coda of the word then it is preferred in the coda position of the syllable rather than the onset position of the previous syllable. This principle is also known as 'Onset minimization principle' because in this principle the preference is given to maximization of codas rather than onsets of the syllable.

2.4 Templatic Syllabification

In Templatic Syllabification a word is divided into its syllables on the basis of the syllable templates found in a language. A syllable template is a tree structure that provides a base to put all the syllables of a word onto it (Hogg & McCully, 1987). It is a sequence of vowel and consonant sounds on the basis of which a syllable

template is formulated (Nazar, 2002). The CV template is known as the basic and most common type of syllable template found in a language (Napoli, 1996). In the previous studies it is revealed that the easiest way to comprehend the phonological properties of a language is to understand the syllable templates of that particular language. Ranjha (2012) suggests templatic syllabification, the more suitable method for Urdu syllabification. The Urdu language contains five syllable templates allowed in every position of the word but the syllable templates V, VV, CV can occur at word initial and middle position but not at final position (Ghazali, 2002).

2.5 The Legality Principle

A syllable cannot start or end with a consonant cluster that does not exist at the beginning or ending of a word of a specific language (Goslin & Frauenfelder, 2001) e.g. English word 'admire' must be syllabified as /əd.mit/ but not written as /ə.dmit/ because /dm/ cluster never come word initially or finally in the English language. Similarly an Urdu word /əlhəmd/ must be written as /əl.həmd/ but not as /ə.lhəmd/ because Urdu does not permit the existence of consonant clusters in initial onset position of the word (Nazar, 2002). A shortcoming of this principle is that it cannot provide a unique syllabification. It has some limitations, so is not a universal principle for all the languages spoken in the world.

Ranjha & Khan (2014) investigated the process of resyllabification in English word by the Urdu speakers to find out the change in their syllabic structure and explored different processes that disturb the syllabic structure of English word: epenthesis, deletion, and replacement.

Usman and Masood (2002) anlysed the syllabification of English borrowed words when these are spoken by the Urdu speakers and identified two processes of insertion and deletion to change the syllabic structure of the borrowed words.

The present study has made the analysis of two syllabification principles to check their performance in Urdu syllabification while syllabifying the English borrowed words. The researchers will identify the syllabification principle in case of syllabifying the words the Urdu language has borrowed from English.

3. METHODOLOGY

The present study has made a comprehensive analysis of two syllabification principles in Urdu while syllabifying the English borrowings. The principles chosen for the analysis are; maximum onset principle and sonority sequence principle. For this purpose, the data of English borrowed words has been collected by using two Urdu lexicons: Jadeed Naseem Al-lughat Urdu and Oxford Urdu English Lughat. The selection of Urdu lexicon is important to confirm the occurrence of English words in both languages. After collecting the enough data the words were provided to the Urdu native speakers and they were asked to pronounce the words. 40 Urdu speakers having the specific knowledge and skill of both the languages were selected for this study through purposive sampling (Bernard, 2002). In purposive sampling the participants having peculiar characteristics are chosen intentionally with a clear purpose in mind. The participants selected for this study belong to Bhimber district. The data was recorded to transcribe the words. A speech analyzing software named 'Praat' has been used for analyzing these words phonetically and on the basis of this analysis the correct syllabification of these borrowed words is found. After getting the Urdu syllabification of these borrowed words both the principles are applied on the words separately and then compared this syllabification with the original syllabification made by the native Urdu speakers. Before applying the principles, all the words were categorized according to their different structural patterns. The analysis began with simple structured words having one consonant in the middle of the word and then came to the complex structured words having some consonant clusters in the middle position of the word. The order of applying the two principles adopted in the study is in such a way that first applying the Maximum Onset principle on the words and then applying the Sonority sequence principle on the words. So in this way the performance of the two principles is noticed in syllabifying the English borrowed words. Different syllabic structures that follow and violate the two principles are also extracted by the researchers.

4. **RESULTS AND DISCUSSION**

4.1 Maximal Onset Principle (MOP)

This principle suggests the syllabic structure of the words by determining the position of the consonants within the syllable of a word. It gives priority to the formation of maximum onsets rather than codas. The study has examined two possibilities of occurrence and violation of MOP in process of syllabifying English borrowed words categorized according to different structural patterns.

4.1.1 Case 1: Observance of MOP in words with one middle consonant

This case describes the possibility in which the Urdu speakers follow MOP to syllabify the borrowed words. If an English word has one consonant in the middle of the word having the possibility of appearing either in the following onset or in preceding coda then in this case Urdu speakers follow MOP to syllabify the word and prefer to put this middle consonant to the onset position of the next syllable rather than the coda position of the previous syllable. The analysed syllabic structures that remain stable after applying maximum onset principle are CV.CV, CV.CVC and CV.CVCC.

Words	Urdu syllabification	Syllabification using
		MOP
fəri (CVCV)	/fə.ri/ (CV.CV)	/fə.ri/ (CV.CV)
filəm (CVCVC)	/fɪ.ləm/ (CV.CVC)	/f1.ləm/ (CV.CVC)
pərint (CVCVCC)	/pə.rɪnt/ (CV.CVCC)	/pə.rɪnt/ (CV.CVCC)

4.1.2 Case 2: Violation of MOP in words with two middle consonant clusters

This case describes the possibility of violation of MOP by Urdu speakers in syllabifying the English words containing two consonants in middle position of the word. In Urdu only a single consonant can appear in onset position and it allows maximum two consonants in coda position (Akram, 2002). As the Urdu language does not allow complex consonantal structure in the onset position so in case of appearing two middle consonants in the English words the Urdu speakers prefer to simplify this consonants cluster and syllabify the word by putting one consonant in previous coda position and the other in the onset position of the following syllable rather than

putting the two consonants in the same onset position. So in this process of simplification of consonant clusters the violation of MOP occurs. The Urdu syllabic structures that change under the process of violation of the MOP are CVC.CV, CVC.CVC, and CVC.CVCC.

Words	Urdu syllabification	Syllabification using MOP
səkru: (CVCCV)	/sək.ru:/ (CVC.CV)	/sə.kru:/ (CV.CCV)
səprin (CVCCVC)	/səp.rɪŋ/ (CVC.CVC)	/sə.priŋ/ (CV.CCVC)
səkrıpt (CVCCVCC)	/sək.rɪpt/	/sə.krɪpt/
	(CVC.CVCC)	(CV.CCVCC)

4.1.3 Case 2: Violation of MOP in words with three middle consonant clusters

This case describes the possibility of violation of MOP in the syllabification of those English words that contain three consonants in middle position of the word. If three consonants appear in word middle position in between the two vowels then due to the sensitive nature of the Urdu the simplification of these consonants cluster occur. Two consonants go to the coda position of the previous syllable and the remaining consonant take the position of onset of following syllable. So in this process of simplification of consonant clusters the violation of MOP occurs. The syllabic structures changed in the process of violation of the MOP are CVCC.CVC and VCC.CVCC.

Words	Urdu syllabification	Syllabification using
		MOP
mınstər	/mɪns.tər/	(m1.nstər)
(CVCCCVC)	(CVCC.CVC)	(CV.CCCVC)
Intrens (VCCCVCC)	int.rens/	/I.ntrens/
	(VCC.CVCC)	(V.CCCVCC)

4.2 Sonority Sequence Principle (SSP)

The words are syllabified on the basis of the Sonority of sounds. Sonority belongs to the vocalic ness and loudness of sounds. According to SSP syllabification nucleus has the highest sonority level than its neighbouring onset and coda positions. Before the nucleus there will be rise of sonority and after the nucleus there will be fall of sonority. To judge the sonority of sound in syllabification of the English borrowed words the study followed the sonority hierarchy presented by Szigetvari (2013) as discussed above. The study has analysed positive role of Sonority sequence principle towards all type of English borrowed words.

4.2.1 Case 1: Observance of SSP in words with one middle consonant

This case describes the observance of Sonority sequence principle in the words having one consonant in the middle position occurring between the two vowels. In this case the syllabic structure of all the words are constructed on the basis of their sonority level and no violation occurs in organizing the sounds in different positions of the words.

Words	Urdu syllabification	Syllabification using
		SSP
gəlu: (CVCV)	/gə.lu:/ (CV.CV)	/gə.lu:/ (CV.CV)
fəra:d (CVCVC)	/fə.ra:d/ (CV.CVC)	/fə.ra:d/ (CV.CVC)
gəra:nt (CVCVCC)	/gə.ra:nt/	/gə.ra:nt/ (CV.CVCC)
	(CV.CVCC)	

All these words fulfil the conditions of Sonority sequence principle. The words with CVCV pattern are divided into two syllables in which each syllable contains a consonant in their onset position with their neighbouring vowels so sonority is increasing towards nucleus position because the vowels are always more sonorous than the consonants. The words with CVCVC pattern also comprises two segments but in it the second syllable takes a consonant in the coda position so in this case sonority is decreasing in both direction away from the nucleus that is also the condition of SSP. In case of words following CVCVCC pattern the appearance of consonant cluster is done in coda position. All the clusters are placed in this position on the basis of their level of sonority by the Urdu speakers.

4.2.2 Case 2: Observance of SSP in words with two middle consonant Clusters

This case discusses the role of sonority sequence principle in those borrowed words that have two consonants in the middle position of the words. SSP always gives positive results in syllabifying the words having consonant cluster in the middle of the word. In Urdu syllabification consonant clusters are always simplified by the Urdu speakers. So this simplification of consonant clusters also minimizes the risk of violation of SSP in syllabifying the words having consonant clusters in the middle of the word. In this case all the syllabic structures follow SSP while adjusting different vowel and consonantal sounds in different position of words.

Words	Urdu syllabification	Syllabification using
		SSP
səkru: (CVCCV)	/sək.ru:/(CVC.CV)	/sək.ru:/ (CVC.CV)
səplit (CVCCVC)	/səp.lɪt/ (CVC.CVC)	/səp.lɪt/
		(CVC.CVC)
səkrıpt	/sək.rıpt/ (CVC.CVCC)	/sək.rɪpt/
(CVCCVCC)		(CVC.CVCC)

All the words having CVCCV pattern are divided into two syllables. In the first syllable sonority is decreasing in both sides due to the occurrence of consonants in both onset and coda position while in the second syllable sonority is decreasing towards onset position due to the occurrence of onset consonants. In CVCCVC pattern words both syllables take consonants for their onset and coda position so sonority is decreasing towards both onset and coda position. Whereas the third pattern CVCVCC have some consonant clusters in last coda position. All these coda consonant clusters follow SSP in their adjustment in the syllable of English borrowed words.

4.2.3 Case 3: Observance of SSP in words with three middle consonants

This case describes the performance of Sonority sequence principle in the words containing three consonants in the word middle position. In the distribution of three consonant clusters two consonants go to the previous coda position and one consonant is placed in the next onset position. Every distribution of three consonant clusters is done on the basis of sonority of sounds.

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Words	Urdu syllabification	Syllabification using SSP
minstər (CVCCCVC)	/mɪns.tər/ (CVCC.CVC)	/mɪns.tər/ (CVCC.CVC)
Intrens (VCCCVCC)	/Int.rens/ (VCC.CVCC)	/Int.rens/ (VCC.CVCC)

In this case both syllabic structures contain consonant clusters in the coda position of initial syllable. Both consonant clusters appearing in coda position of initial syllable are constructed on the basis of their level of sonority.

5. CONCLUSION

The present study compares the performance of syllabification principles in organizing the syllabic structure of English borrowed words by Urdu speakers. It has been observed that Sonority sequence principle is more suitable for Urdu syllabification because it is followed by the Urdu speakers in the syllabification of all types of English borrowed words while maximal onset principle does not show stability in all cases. The violation of maximum onset principle is noticed in case of syllabifying the words having consonant clusters in the middle position of the word because Urdu strictly prohibits the use of complex onset in syllabifying the words. Urdu has delicate nature towards the onset of the syllable and does not permit more than one consonant in the onset position. It always needs simplification in case of syllabifying the words containing consonant clusters in the onset position as argued by Ghazali, 2002; Nazar, 2002; Ranjha, 2012). So due to this reason maximal onset principle does not fulfill the requirements of Urdu syllabification and shows mixed behavior in the syllabification process of the Urdu language. So this study prefers sonority sequence principle over maximal onset principle for Urdu syllabification and suggested it the best method for the Urdu language.

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	Of in words with One	
Words	Urdu syllabification	Syllabification
		using MOP
fəri:	/fə.ri:/	/fə.ri:/
fəlu:	/fə.lu:/	/fə.lu:/
bəlu:	/bə.lu:/	/bə.lu:/
gəla:s	/gə.la:s/	/gə.la:s/
gəra:f	/gə.ra:f/	/gə.ra:f/
kəla:s	/kə.la:s/	/kə.la:s/
fıləm	/fɪ.ləm/	/fɪ.ləm/
fəru:t	/fə.ru:t/	/fə.ru:t/
pərınt	/pə.rɪnt/	/pə.rɪnt/
Fərənt	/fə.rənt/	/fə.rənt/
Fərend	/fə.rend/	/fə.rend/
fərent∫	/fə.rentʃ/	/fə.rentʃ/

APPENDIX Observance of MOP in Words with One Middle Consonant

Violation of MOP in Words with Middle Consonant Clusters

Words	Urdu syllabification	Syllabification
		using MOP
səkru:	/sək.ru:/	/sə.kru:/
səkri:n	/sək.ri:n/	/sə.kri:n/
səpriŋ	/səp.rɪŋ/	/sə.prɪŋ/
səplıt	/səp.lɪt/	/sə.plɪt/
səkwɒ:∫	/sək.wp:ʃ/	/sə.kwp:ʃ/
səkrıpt	/sək.rıpt/	/sə.krɪpt/
Intrens	/int.rens/	/I.ntrens/

Intrəst	/int.rəst/	/I.ntrəst/
mınstər	/mɪns.tər/	/mī.nstər/
Konslər	/kons.lər/	/ko.nslər/
t∫anslər	/tʃans.lər/	/tʃa.nslər/
Observance	of SSP in Words with One	Middle Consonant
Words	Urdu syllabification	Syllabification
		using SSP
gəlu:	/gə.lu:/	/gə.lu:/
gəla:s	/gə.la:s/	/gə.la:s/
fəra:d	/fə.ra:d/	/fə.ra:d/
fər v :k	/fə.rɒ:k/	/fə.rp:k/
bəlvk	/bə.lɒk/	/bə.lɒk/
dərop	/də.rɒp/	/də.rɒp/
fəlıt	/fə.lɪt/	/fə.lɪt/
fərıdʒ	/fə.rɪdʒ/	/fə.rɪdʒ/
gəra:nt	/gə.ra:nt/	/gə.ra:nt/
pəla:nt	/pə.la:nt/	/pə.la:nt/
dəra:ft	/də.ra:ft/	/də.ra:ft/
bəra:nt∫	/bə.ra:ntʃ/	/bə.ra:ntʃ/
Observance of	f SSP in Words with Middle	e Consonant Clusters
Words	Urdu syllabification	Syllabification using
		SSP
səkru:	/sək.ru:/	/sək.ru:/
səkri:n	/sək.ri:n/	/sək.ri:n/
səpriŋ	/səp.rɪŋ/	/səp.rɪŋ/
səplıt	/səp.lɪt/	/səp.lɪt/
səkwɒ:∫	/sək.wp:ʃ/	/sək.wp:ʃ/
səkrıpt	/sək.rıpt/	/sək.rıpt/
Intrens	/int.rens/	/int.rens/
Intrəst	/int.rəst/	/int.rəst/
mınstər	mīns.tər/	mīns.tər/
Konslər	/kons.lər/	/kons.lər/
t∫anslər	/tʃans.lər/	/t∫ans.lər/