SYLLABLE STRESS IN URDU

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ABSTRACT

Syllable stress plays a vital role in determining the pronunciation of a word in any language. In every language where the stress exists, a particular method of assigning stress is observed. This research is based on determining the appropriate algorithm, which assigns stress on the right syllable in Urdu language. From the data collected, 14 syllable structures in Urdu were identified. Although the common convention is that only single stress per word exists in Urdu but in some special cases, multiple stresses were also found.

1. INTRODUCTION

There are different views of linguists about stress. Stress is associated with an increase in respiratory activity on the part of the speaker which causes an increase in any one or other of the following; vowel length, pitch, loudness (Hogg and McCully, 1987, p. 1).

Placement of phonological stress on a particular syllable within a word is a defining property of that word, and this can be referred to as word stress or lexical stress. The paper views the word stress assignment strategy in Urdu.

2. LITERATURE REVIEW

It is important to be equipped with the literature background of stress to come up with results on Urdu stress.

2.1 Similar Behavior of Hindi-Urdu

Hindi-Urdu is classified as Indo-Aryan, a major sub-branch of Indo-European. Hindi is the national language of India, and Urdu is the national language of Pakistan.

Masica's (1991, p. 27) view about Hindi-Urdu is that they are different *literary styles* based on the *same* linguistically defined sub dialect. Hence Hindi-Urdu tends to show quite a similar behavior in many phonetic aspects.

2.2 General view about stress of New Indo Aryan languages (NIA)

Hindu-Urdu falls in the group of NIA languages. Generic views of linguists concerning NIA languages stress tend to be informative and helpful in the research on lexical stress in Urdu.

NIA languages are *syllable* or *mora-timed* rather than stress-timed, and although stress patterns differ from language to language, stress is generally predictable, if not always simply so. To say stress is predictable does not mean it always falls on a particular syllable, as in Polish or Finnish (Masica, 1991, p. 121).

2.3 Hindi-Urdu Stress

Stress is *not distinctive* in Hindi-Urdu; words are not distinguished on the basis of stress alone. For instance, the word kəla 'art', whether stressed as kə'la or kəla', means the same.

Stressing of syllables is tied to *syllable weight* in Hindi-Urdu. The tense vowels are phonetically long and in pronunciation the *vowel quality* as well as *length* is maintained irrespective of the position of the vowel or stress in the word.

Syllables are classified by one of three measures of weight: *light* (syllables ending in lax, short vowel), *medium* (syllables ending in a tense, long vowel or in a lax, short vowel followed by a consonant) or *heavy* (others). Where one syllable in a word is of greater weight than others, the tendency is to place the word stress on it. Where more than one syllable is of maximum weight in the word (i.e. there is a succession of medium or heavy syllables),

usually the last one bears the word stress (Bernard, 1990, p. 55).
Mehrotra (1965, p. 96) says, stress plays a vital part in Hindi, although not as vital as in English, or Russian, or Greek. There is not a single syllable that does not bear some degree of stress, but the weak stress has been considered to be 'no stress phoneme' and the heavy stress has been regarded as 'stress phoneme'.

Generally, the location of word stress in Hindi-Urdu is predictable on the basis of syllable weight. Probably the simplest account of stress placement in Hindi-Urdu comes from Hussain (1997). Based on the number of segments in the rhyme, Hindi-Urdu syllables can be classified as mono moraic or 'light' (V), bi moraic or 'heavy' (VV or VC), or tri moraic or 'super heavy' (VVC or VCC). Given these definitions, Hussain (1997) explains that the last heavy syllable is stressed, and if all syllables are light, the penultimate syllable is stressed. This account assumes a notion of extrametricality, which says that the final mora of the word is invisible to the stress rule.

3. PROBLEM STATEMENT

The key purpose of this paper is to verify the correctness of the Urdu lexical stress algorithm proposed by Hussain (1997). Also, stress-marking parameters in the domain of metrical phonology are determined. Besides this, possible syllable structures of Urdu are found.

4. METHODOLOGY

The main source for devising the stress algorithm by Hussain was *Standard Twentieth Century Dictionary: Urdu into English* (Qureshi, 1992). The same dictionary is used for proving the validity of algorithm. The dictionary has stress marked in its transcription without any explanation about the way it is determined.

Sample data of 450 words was taken, going in a sequential order from the start of the dictionary. Every word of sample data is transcribed along with the lexical stress (referred from the dictionary) and syllabic structure. Hussain (1997) has made the observation based on two and three syllables words. The study is further extended to analyze the words with four or more syllables.
Sample data is given in Appendix A.

4.1 Overview of lexical stress assignment algorithm

The algorithm proposed by Hussain (1997, p. 41) can be generalized as follows:

- Urdu is sensitive to weight of a syllable for stress assignment
- There is one stress per word
- Stress position is not fixed relative to a word edge in Urdu, e.g. lexical stress is not always assigned to the first, last or the penultimate syllable in a word
- Representing syllable in terms of abstract mora marks syllable stress. A mora represents a weight unit. Using the moraic concept, short vowels and coda consonants are mono-moraic and long vowels are bi-moraic. No mora is assigned to onsets.
- Final mora in the final syllable is considered extrametrical i.e. its weight is not counted in the syllable weight
- Starting from right and moving to the left of word, stress is marked on the first syllable which is either bi-moraic or tri-moraic

4.2 Examples

Table1 shows the examples of two, three and four syllables words that prove the authenticity of the algorithm.
Stress marked at the end of the stressed syllable. Long vowel is represented by VV, short vowel by V and consonant by C.
Moraic weight is calculated considering the last mora in final syllable as extrametrical.

TABLE 1 Examples of stress in two, three, four and five syllable words

Word	Syllable Structure	Moraic Weight
ɑ'.xɪɾ	**VV.CVC**	**2.1**
bə̤d.hə.vas'	**CVC.CV.CVVC**	**2.1.2**

ɪn.se.d̪a'.d̪i	**VC.CVV.CVV.CVV**	**2.2.2.0**
pə.ra'.ɪ.mə.ri	**CV.CVV.V.CV.CVV**	**1.2.1.1.0**

5. RELEVANCE OF METRICAL PHONOLOGY IN STRESS ASSIGNMENT

Goldsmith (1990) suggests that the ordeal frame work (tree structure) in metrical phonology bears relevance to stress assignment.

5.1 Stress Marking Parameters

Gold Smith (1990, p. 82) has established some parameters that play a vital role in stress assignment. Knowing these parameters, stress in language can easily be determined without having knowledge of the behavior of the language.

5.1.1 Bounded-ness

In bounded stress languages, a stress must fall within a fixed distance of another stress or a word boundary.

In unbounded stress languages, stress may fall at an unlimited distance from another stress or a word boundary (Hussain, 1997, p. 15). As Urdu has only primary stress, it can be deduced that it is an *unbounded stress language*.

5.1.2 Quantity sensitivity

Goldsmith (1990) says that only the content of rhyme not the onset is useful in determining stress in a syllable. These rhymes are then organized into simple constituents called *feet*. The feet combine to form a *prosodic word*. The principles of stress foot establishment will need to have access to syllable weight if they are to place stress feet correctly in these systems, known as quantity-sensitive systems.

As found earlier that Urdu establishes a stress distinction involving weight of syllable. Hence Urdu can be termed as *quantity sensitive language*.

5.1.3 Headedness at foot level

Foot headedness is determined on the basis of direction of secondary stress found at foot level. Hence *right headed foot* is the one in which the right most rhyme of foot is stressed. On the contrary, *left headed foot* has the left most rhyme stressed.

While assigning metrical feet to a word it should be taken into account that every rhyme is part of some stress foot.

This is important because if a word has an odd number of syllables to be gathered in binary feet then the left over single syllable is made a *degenerated foot* (solitary foot). As Urdu is a single primary stress unbounded language so the headedness at foot level cannot be determined.

5.1.4 Headedness at word level

If no rule establishes foot-level metrical structure, then the word level metrical feet can just take the rhyme-nodes as their terminal elements.

At the word level metrical structure, the rightmost foot having the greatest prominence is *right-headed prosodic word* and the one with leftmost foot having primary stress gives the *left headed prosodic word* (Goldsmith, 1990, p. 189).

Stress position is not fixed relative to a word edge in Urdu, e.g. lexical stress is not always assigned to the first, last or the penultimate syllable in a word (Hussain, 1997, p. 43). So the headedness of stress at world level is also unpredictable.

5.1.5 Direction of feet formation

As feet cannot be determined in Urdu, its direction is also incalculable. But according to Hussain's algorithm (1997), the syllabic weight assignment and eventually stress marking starts from the right. Hence Urdu is *right headed* in stress assignment.

6. RESULTS

During the research possible syllable templates were figured out.

6.1 Possible Syllable Templates

Following syllable structures were found during the research. The transcription is done using the International Phonetic Alphabet (IPA) standards.

V	**ɪ.ka.nim**
VV	**a.bad̲**
VC	**ɪt̲.e.had**
VCC	**ə̃nkʰ.ɽɪ.jã**
VVC	**ab.ru**
VVCC	**æks.trɑ**
CV	**a.xɪ.rə̃t̲**
CVV	**a.bə̃s.t̲i**
CVC	**at̲.ʃə̃k**
CVCC	**a.d̲ə̃rʃ**
CVVC	**ab.ʃar**
CCVC	**a.ɽ̲hə̃t̲**
CCVV	**ɪn.flu.æn.za**
CVVCC	**bə̃r.d̲aʃt̲**

6.2 Percentage of correct result

The sample data collected is enough to support the algorithm devised by Hussain(1997) . The algorithm tends to be calculating correct stress assignment in Urdu in approximately 80% of the cases out of the sampled data.

Words having 2 syllables (Bi syllabic)
87/108=80.5%

Words having 3 syllables (Tri syllabic)
185/225=82.2%
Words having 4 or more syllables
94/118=79.6%

Stress seems to behave differently in 20% of the cases. There are several reasons to it. May be the word being stressed is an affixed or a compound word.

Affixation seems to have stress assigning and stress removing property. For example, in word ‘ af.rid̲’.gar ’, stress must be assigned to syllable ‘ gar ’ according to the algorithm (as this syllable has a moraic weight of 2), but as syllable ‘gar’ is a suffix hence stress shifts to the left.
It is observed that in Urdu affix is treated separate from the root. Root has separate stress and affix may or may not bear stress. Keeping suffix apart, the algorithm works well on the root and suffix.
Like in word ‘ ab’.doz’ ’ and
ˈ ab’.gi’.naʰ ˌ, prefix ‘ ab ’ is assigned stressed separately from the root, thus making the word stressed twice.

Strange behavior of stress may also be observed in compound words. As compound word is already a combination of two independent words hence stress is found on both the words and both words are treated separately, like the word ‘ artʃ’ bɪ’.ʃup ’and ‘ pə̃.let’ fa’.rə̃m ˌ.

Beside affixed and compound words, there are some words bearing multiple stresses with inconsistent pattern. Stresses are marked without following the moraic weight concept. It is noticed that native speakers seem to assign stress to a syllable on the basis of those phonemes in a syllable, which have more energy release or friction, like in stops /b/, /p/, /d/, / d̲/, / t/ ,/t̲ /, /g/, affricates /dj/, /tʃ/ ,trill /r/, and fricatives /s/, /z/. For example in words like ‘ t̲ə̃r’.sil’ ‖, ‘ b̲ə̃’.bu’a ˌ and ’ t̲ə̃r’.bə̃.tə̃r’ ‖.

At some places vowel lengthening is also taken into account i.e. syllable having a long vowel is considered more prominent and hence stressed thus violating the rule of single stress per word.

‘ e’.ʈɪ.laf’ ‖, ‖ pu’.r**ə́m.pur’** ‖

In four syllable words, where multiple stresses exist because of the above-mentioned analysis, stress seems to be on alternate syllables. For example in words like

‘ʈ**ə́m’.ʈ̲ə.ma’.na** ’,

’ʈ^{h}**ə́r’.ʈ̲^{h}ə.ra’.hə́t** ’,

‘p**ə́.ra’.pe.gə́n’.da** ’and

’**æs.o’.sɪ.e’.ʃə́n** ‖.

7. DISCUSSION

The stress algorithm proposed, works for most, but not all of the words in the lexicon. (Hussain, 1997, p. 51).

It was rightly observed by Hussain that there are exceptions that do not prove the algorithm. Some of the *borrowed words* have the stress at a different location than expected.

May be a detailed analysis of the exceptions can lead to some consistent pattern. The data collected for verification is not enough to provide precise results. Stress assignment is referenced by only one dictionary, Qureshi (1992), which gives no explanation of the way stress is assigned.

Extensive analysis can be done for more accurate results by verifying the word stress assignment from other dictionaries like S.W. Fallon (1879), and collecting more data. Another way of stress verification can be by analyzing the fundamental frequency pattern of the word. The point where there is an abnormal behavior of frequency i.e. increase or decrease in pitch, is where the stress lies.

It is observed that multiple stresses do exist in Urdu, though linguists are not pointing them out. It has been ignored may be cause of the reason that the stress which is unexpectedly marked is equivalent to the stress on the other syllable. Hence the one that follows the convention of moraic weight was picked. This is just a supposition; the analysis done for multiple stresses needs to be studied in greater depths to prove its validity.

8. REFERENCES

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