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Aspirate sonorants and word-stress in Bhojpuri

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ABSTRACT

Bhojpuri is a new Indo-Aryan language in South Asia. It is mainly spoken as a cross-border language between Nepal and India and written widely in Devanagari script. Phonemically, Bhojpuri has contrasts on the basis of aspiration, voice and breathiness. Besides these, Tiwari (1960/1984) and Shukla (1981) among others have recorded breathy sonorants against retroflex, nasal, flap and lateral model sonorant consonant phonemes in Bhojpuri. But they have presented them as a joint cluster of phonemic pairs in Devanagari script as presented in Hindi, Nepali, Maithili and some other Indo-Aryan languages to some extent. Similarly, word-stress is considered allophonic in Indo-Aryan languages, as Shukla (1981) has mentioned with Bhojpuri. But listening to such sonorant consonants, they don't seem so. Whatsoever, the phenomena were not examined empirically. So, this article includes empirical verification of the problem. To meet the objectives, different Bhojpuri native speakers were consulted and samples were collected and analyzed using different devices. Those consultants were selected randomly from different places and ages, both male and female. This empirical verification concludes that those sonorants are devoicing aspirate consonants, and word-stress is phonemic in Bhojpuri as English does have. This study is significant to explore such characters in other new Indo-Aryan languages if verified.

Keywords: breathy, devoicing, aspirate, sonorants, stress.

INTRODUCTION

Bhojpuri is widely written in Devanagari script, initially developed for Sanskrit orthography. Its main characteristic is to be identical with phonemes. But

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according to the need for the new Indo-Aryan languages, some changes have already occurred in it based on articulation of the different phonemes in the respective languages. But the basic orthography has a very negligible changes occurred. Besides, some consonant phonemes are used to be expressed as cluster ones known as sanyuktakshar in Devanagari as डूह/*rha*/, ड्ह /*ṛha*/, ँह /*nha*/, म्ह /*mha*/, हे /*rha*/, ल्ह /*lha*/ and so on. Among them Saksena (1937/1971, p. 24) has mentioned म्ह /*mḥ*/, ँह /*nḥ*/, हे /*rḥ*/, ल्ह /*lḥ*/, डूह /*rḥ*/ in Awadhi. Koul (2008, p. 12) only records डूह /*rḥ*/ in Hindi. Paudyal (2013, p. 61) exhibits /*m^h*/, /*n^h*/, /*ṛ^h*/, /*l^h*/ and /*r^h*/ in Chitonia Tharu. Regarding Bhojpuri, Grierson (1883, p. 19) has only mentioned ढ /*rha*/ in Bhojpuri and other languages. Following him, Tiwari (1960, p. 3 and 1984, p. 299) has recorded म्ह /*mḥ*/, ँह /*nḥ*/, ल्ह /*lḥ*/, र्ह /*rḥ*/, डूह or ढ /*rḥ*/; Shukla (1981, p. 13) records /*m^h*/, /*n^h*/, /*ṛ^h*/, /*l^h*/, /*r^h*/ and /*R^h*/; and Tripathy (1987, p. 42-44) records डूह or ढ /*r^h*/ as an allophone of ढ /*ḍ*/ but डूह /*ṛ^h*/, ँह /*n^h*/, म्ह /*m^h*/, र्ह /*r^h*/ and ल्ह /*l^h*/ as independent phonemes in Bhojpuri.

Regarding word-stress, Grierson (1895) admits that the Modern Indo-Aryan vernaculars follow the rules of the Sanskrit stress-accent, as distinct from the ancient musical one, the only difference is that they do not usually throw the accent further back than the antepenultimate if the word ends in a long syllable. But it doesn't clarify whether shift of stress in the same environment can make phonemic contrast. Masica (1991) considers New Indo-Aryan languages to have syllable of *mora*-timed rather than *stress*-timed, although stress patterns differ from language to language. It considers stress generally predictable, if not always simply so. It further quotes Goswami (1966) demonstrating the existence of a phonemically contrastive stress in Assamese, e. g., 'bandḥ 'friend' vs. ban'dḥ 'you fasten'; 'piṣe 'he is drinking' vs. pi'se 'then'. It also quotes Shackle (1976) noting a few cases of lexically contrastive stress in Siraiki, e. g., 'itla 'so much' vs. it'la 'informing'. Shapiro (2003) considers the phonemic status of stress in Hindi as a matter of considerable controversy.

In Bhojpuri, stress is not considered significant as it is very weak and is frequently changing from one to another syllable (Tiwari, 1960, p.16). Likewise, stress is not phonemic in Northern Standard Bhojpuri (Trammell, 1971, p.138). Shukla (1981) also mentions stress in Bhojpuri as the relative loudness of one syllable in contrast to another but its status is not phonemic. However, in my observation, stress in Bhojpuri is significant and phonemic (Lohar 2020; Thakur 2021 and 2022).

In this environment these are the queries to be verified:

- (a) Whether the aspirate sonorants are consonant phonemes or clusters.
- (b) Whether they are breathy or devoicing aspirate sonorants.
- (c) Whether the word-stress is phonemic in Bhojpuri.

Therefore, the objectives of this research article are the followings:

- (a) To verify that the aspirate sonorants are phonemes, not the clusters.

- (b) To verify that they are devoicing aspirate rather the breathy ones.
- (c) To verify that the word-stress is phonemic in Bhojpuri.

METHODS AND MATERIALS

In Bhojpuri, nasals /m/, /n/ and /ŋ/, semi-vowel /y/ and /w/, lateral /l/, flap/r/ and retroflex/ɽ/ are the model sonorant consonant phonemes. Tiwari (1954/1960) and Shukla (1981), among others, have recorded /ṃ/, /ṅ/, /ṇ/, /ḷ/, /ɽ/ and /ṛ/ as the breathy counterparts of /m/, /n/, /ŋ/, /l/, /r/ and /ɽ/ respectively.

Similar tendency is also observed by Koul (2008) in Hindi and by Saksena (1938/1971) in Awadhi and so on.

But they are being treated as breathy phonemes in their neighbors and also in some Tibeto-Burman languages. They are acoustically analyzed in this article to classify them appropriately. Several male and female informants of different ages and birth-places in the Bhojpuri speech community were consulted for obtaining samples for this analysis. Among them samples of three gents and three ladies were chosen to avoid technical errors: Mr. Aphimilal Thakur and Mrs. Parameshwori Devi Thakur (my parents) above 60, me and my wife Mrs. Gajamotia Devi both between 50-60, Mr. Anand Kumar Gupta and Miss Jyoti Tiwari both under 40. My mother and wife were born in Rautahat, My father and I were born in Bara and Mr. Anand and Miss Jyoti were born in Parsa districts.

For this purpose, the informants were interviewed and recorded on an audio device. Then Audacity and Praat were used to analyze the word level presented in the following section.

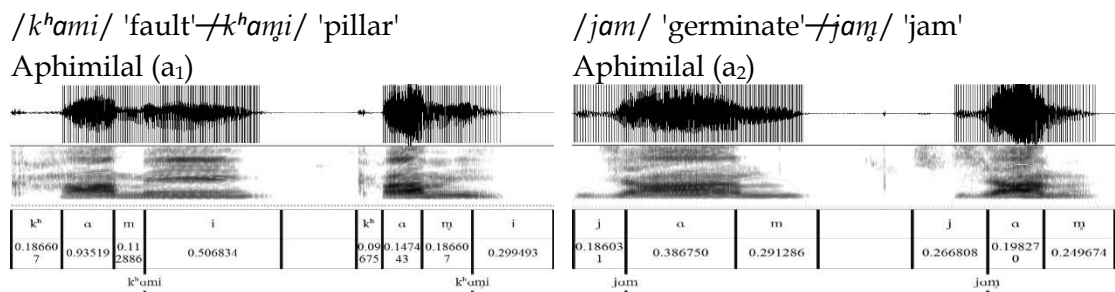
RESULTS AND DISCUSSION

Aspirate sonorants

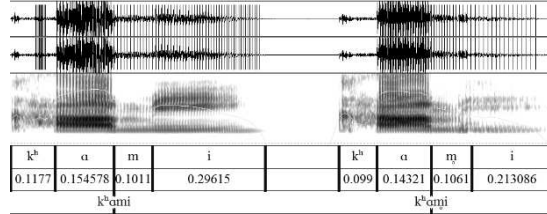
Oscillograms and spectrograms of their voices through praat are presented and analysed, as follows (Lohar 2020, p. 68-76; Thakur 2021, p.30-37 and Thakur 2022, p. 34-41):

Figures 1.1-1.6 provide the findings as follows:

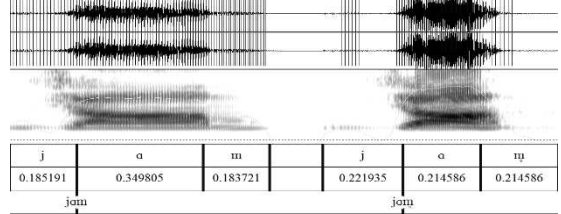
Figure 1.1 Acoustic presentations of /m/ and/ṃ/



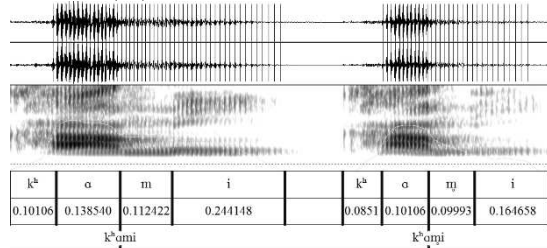
Gopal (a₁)



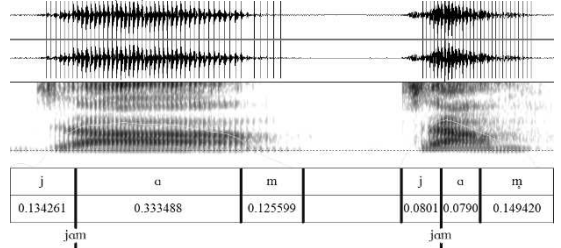
Gopal (a₂)



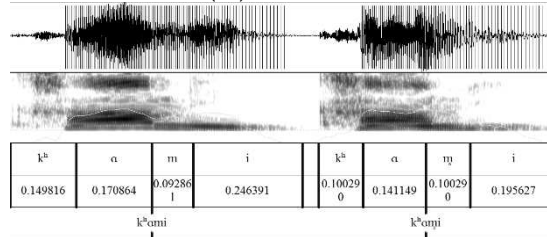
Anand (a₁)



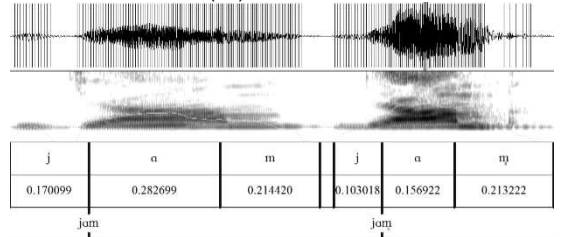
Anand (a₂)



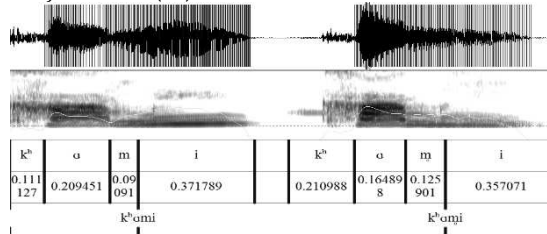
Parameshwari (a₁)



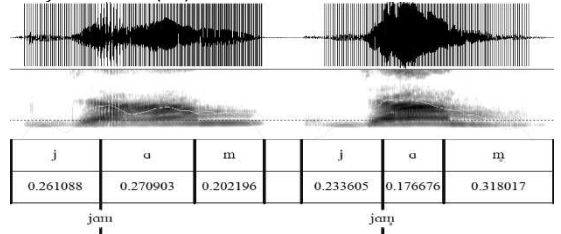
Parameshwari (a₂)



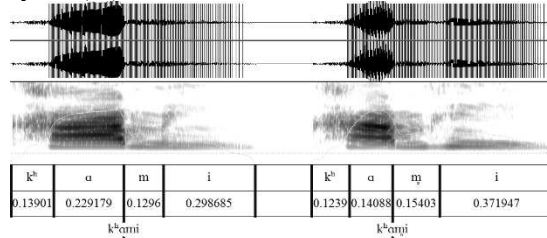
Gajamotia (a₁)



Gajamotia (a₂)



Jyoti (a₁)



Jyoti (a₂)

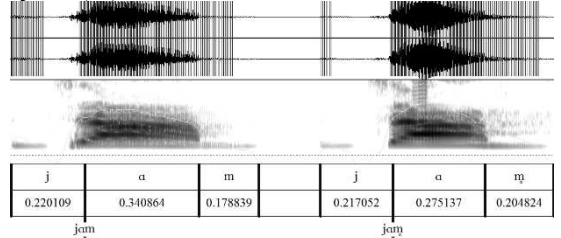
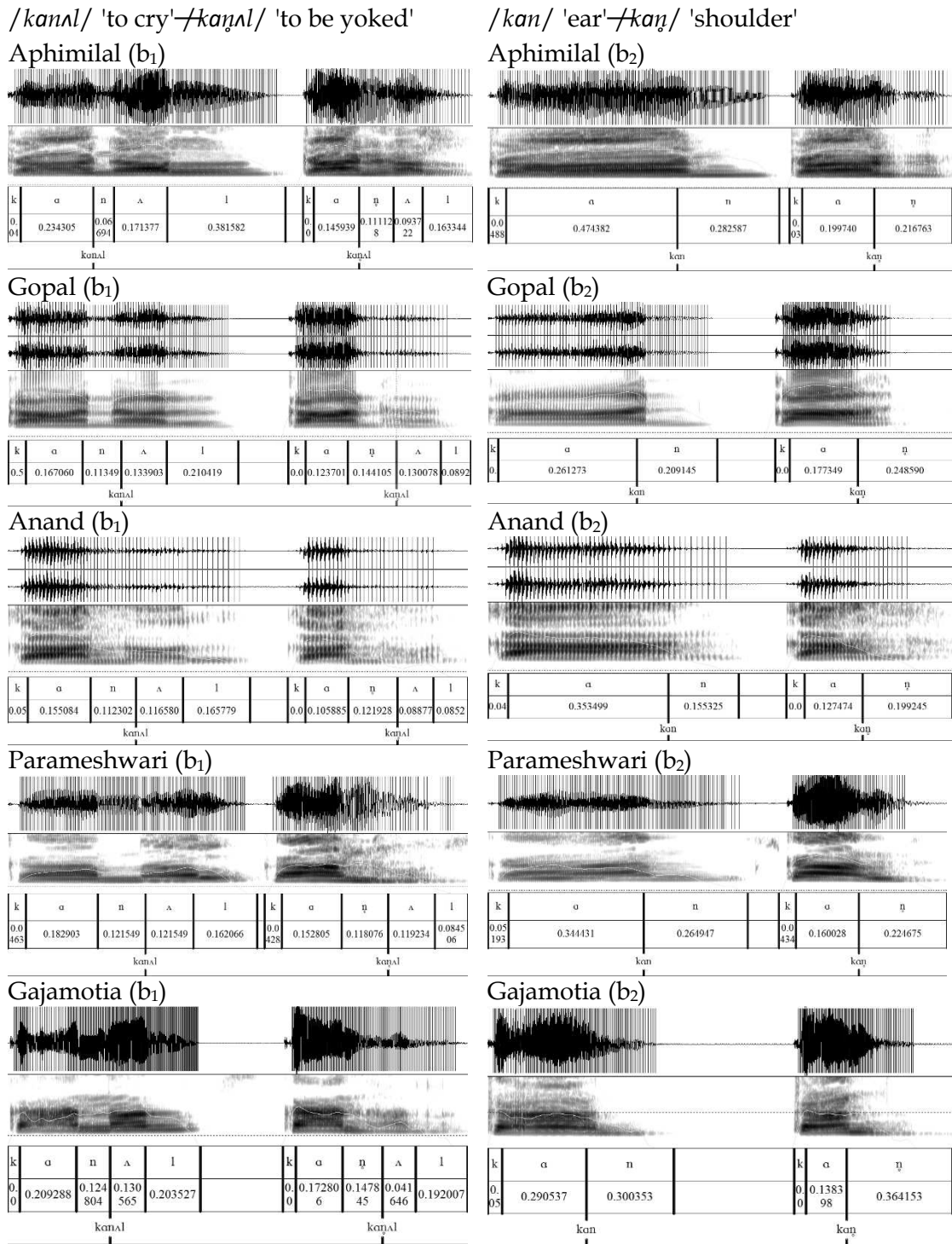


Figure 1.2 Acoustic presentations /ɲ/ and /ŋ/



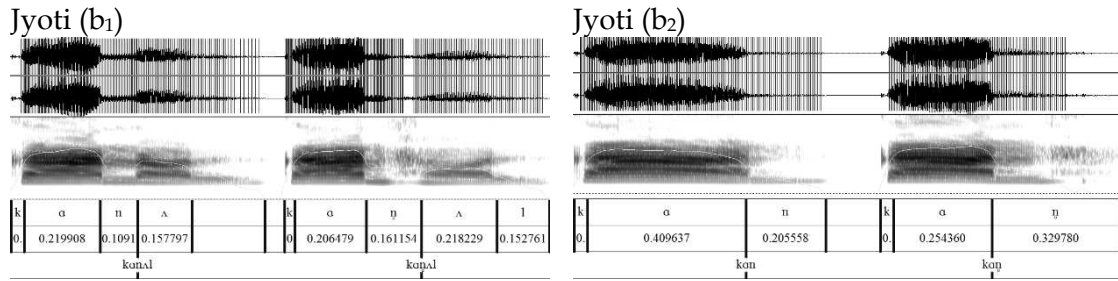
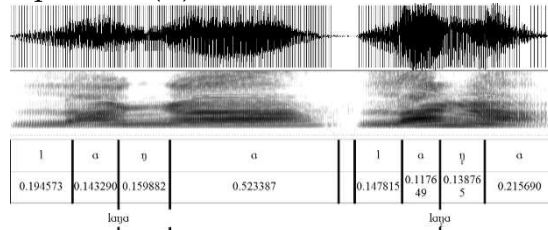


Figure 1.3 Acoustic presentations of /ɳ/ and /j/

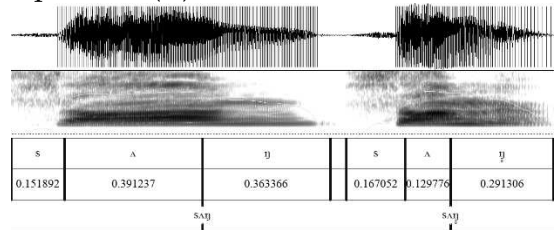
/laŋa/ 'rude' - /taŋa/ 'leapt'

Aphimilal (c₁)

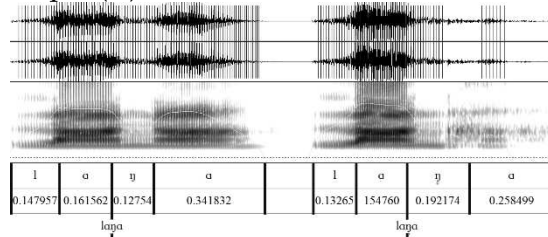


/saŋ/ 'friendship' - /saŋ/ 'union'

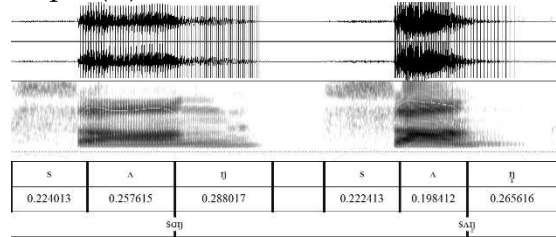
Aphimilal (c₂)



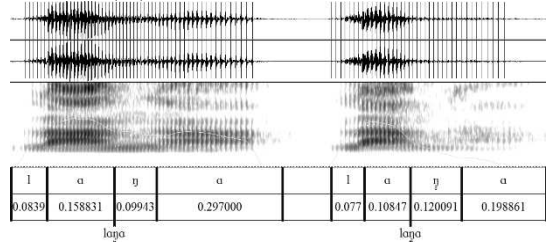
Gopal (c₁)



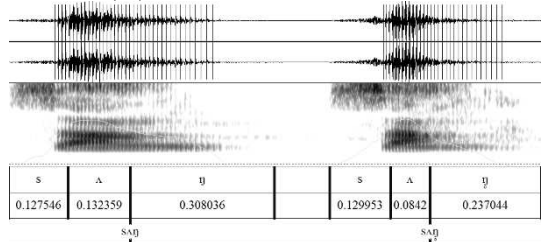
Gopal (c₂)



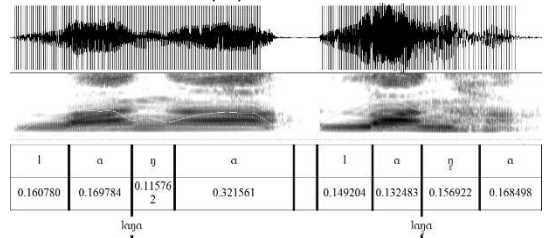
Anand (c₁)



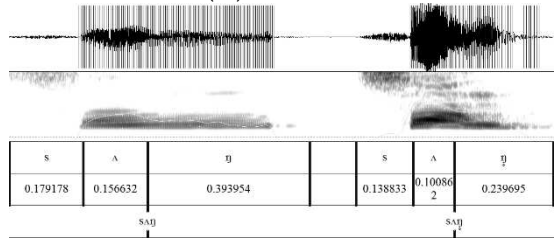
Anand (c₂)



Parameshwari (c₁)



Parameshwari (c₂)



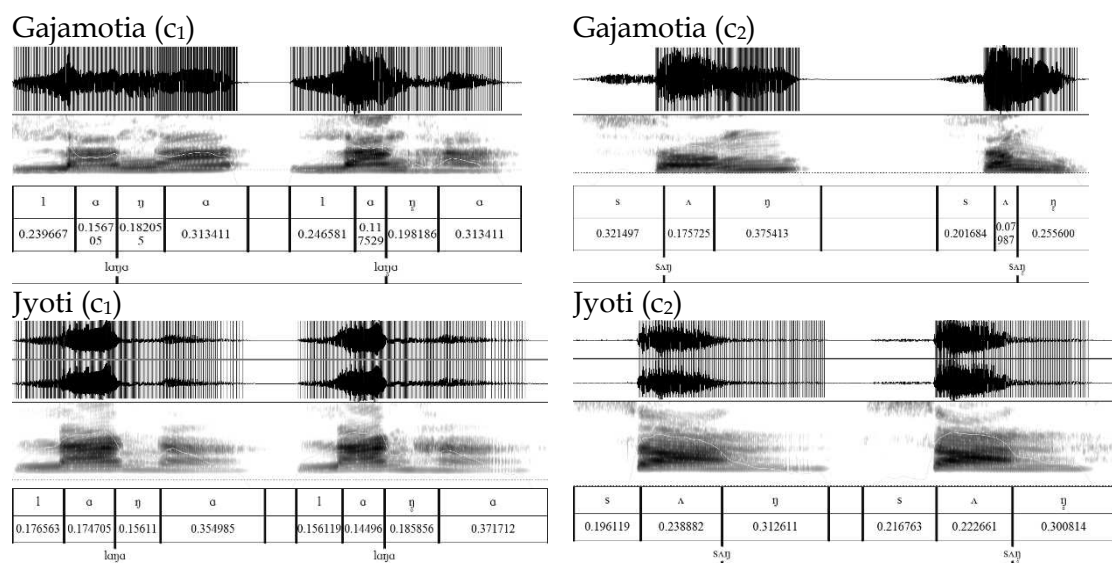
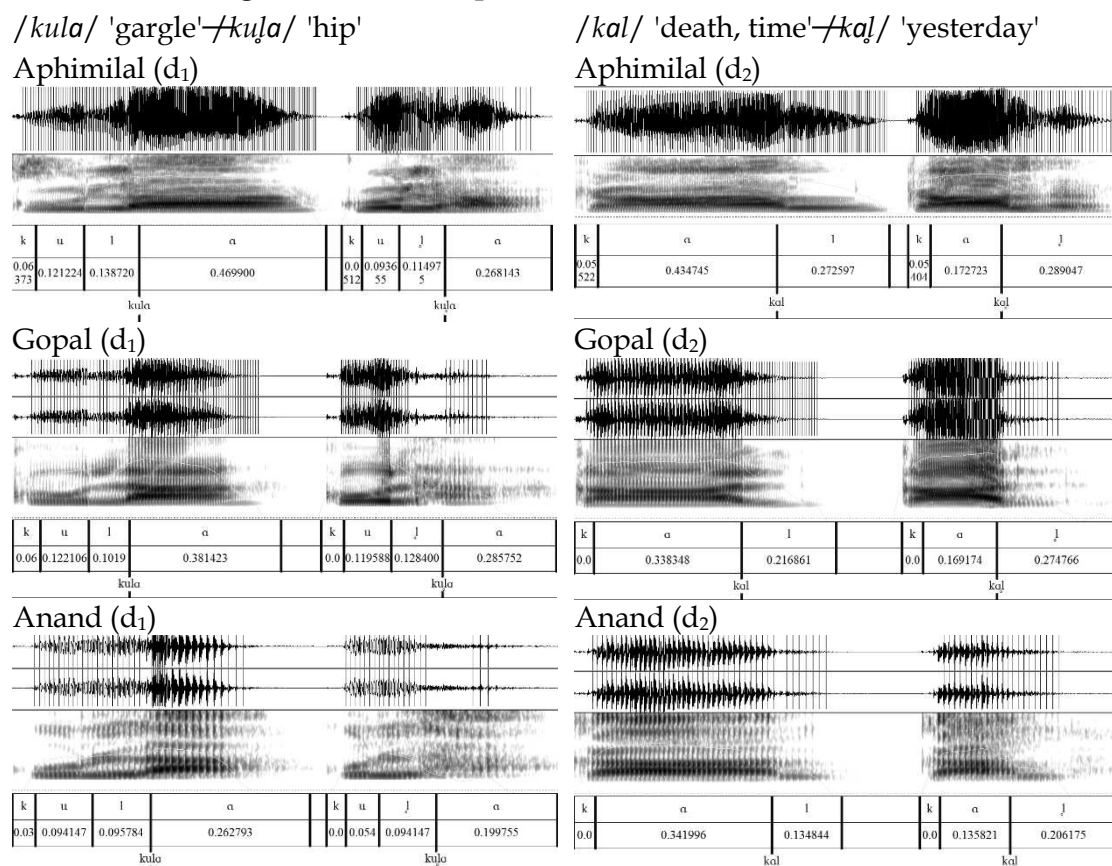


Figure 1.4 Acoustic presentations of lateral /l/ and /ɭ/



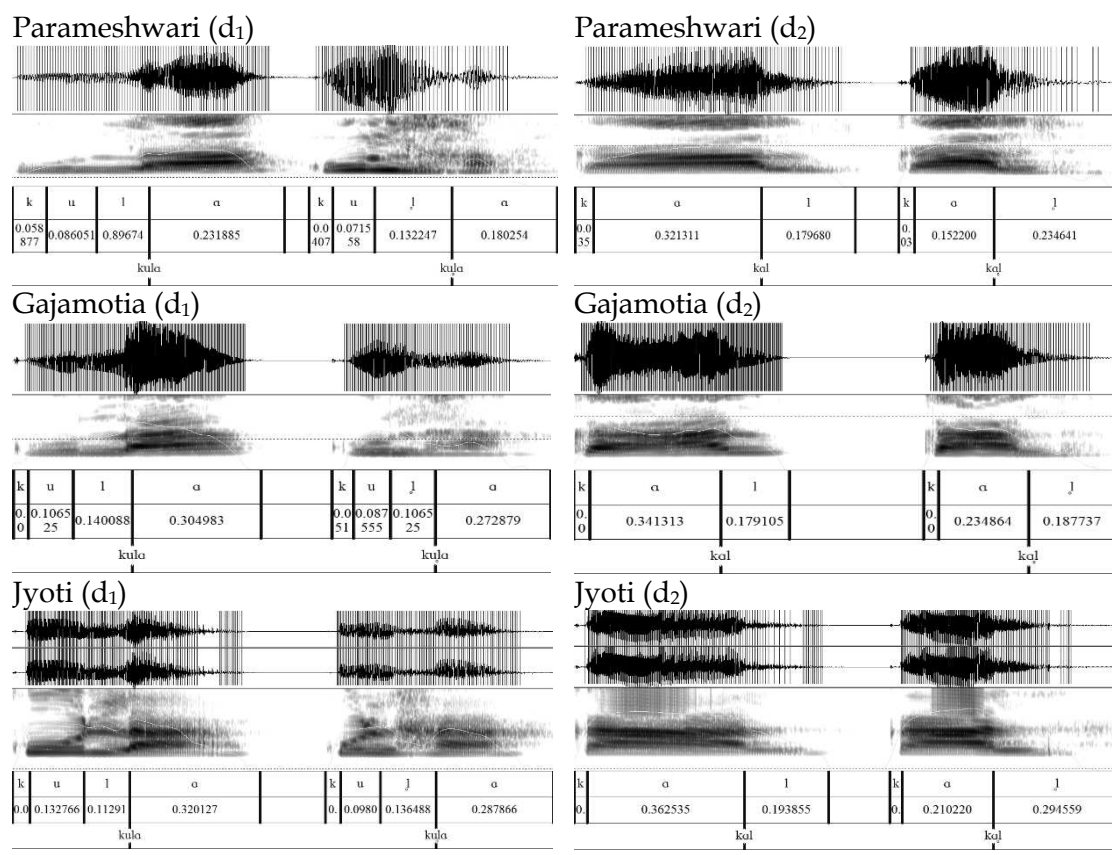
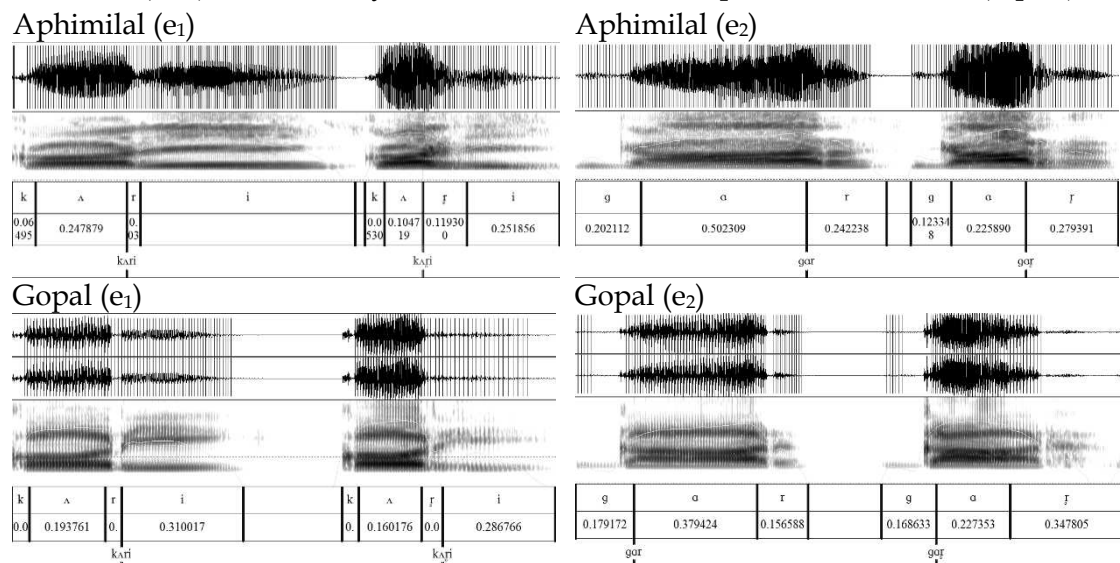


Figure 1.5 Acoustic presentations of /r/ and /ɽ/

/kʌri/ 'do(FUT) - /kʌɽi/ 'curry'

/gar/ 'to squeeze' - /gɑɽ/ 'thick (liquid)'



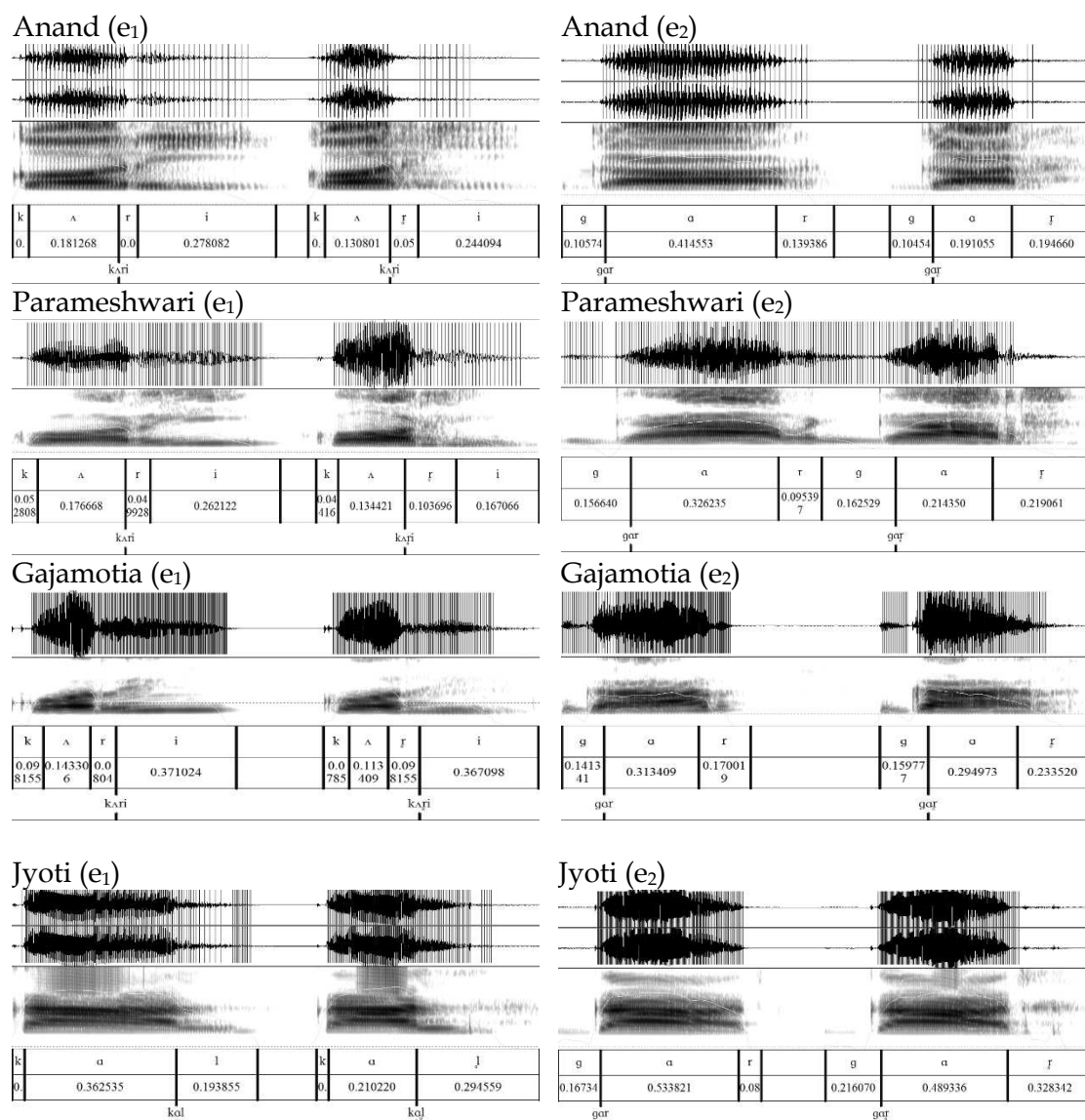
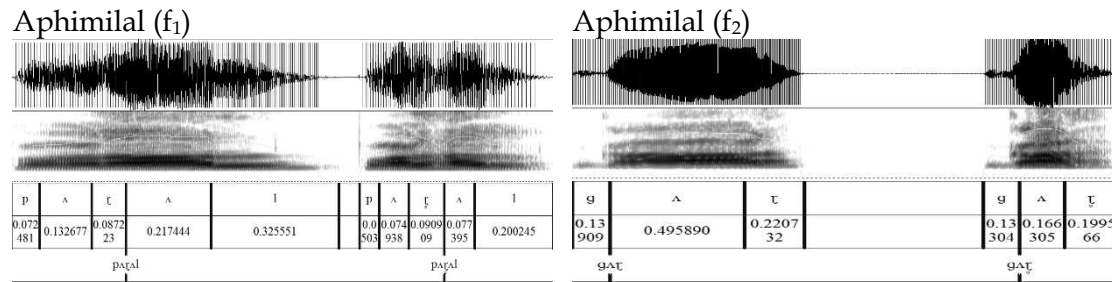


Figure 1.6 Acoustic presentations of /t/ and /t̥/

/pʌlʌl/ 'to lie' - /pʌl̥ʌl/ 'to read'

/gʌr/ 'to prick' - /gʌr̥/ 'forte'



- (a) The aspirate sonorant counterparts of /m/, /n/, /ŋ/, /l/, /r/ and /ɾ/ in the word-final position have caused loss in voicing bars in the offset phase in the respective spectrograms.
- (b) Intensity has also been found dropped while articulating the aspirate sonorant counterparts of /m/, /n/, /ŋ/, /l/, /r/ and /ɾ/.

Besides, comparisons of vowel lengths before the regular consonants and their aspirate sonorant counterparts matter to determine whether they are breathy or voiceless. Table 1.1 presents vowel lengths before model sonorants /m/, /n/, /ŋ/, /l/, /r/ and /ɾ/ along with their aspirate counterparts both in intervocalic and word-final positions. Similarly, the lengths of regular consonants and their aspirate sonorant counterparts also matter to determine whether they are breathy or voiceless. Table 1.2 presents lengths of regular consonants and their aspirate sonorant counterparts (Lohar 2020, p.76-78; Thakur 2021, p.38-39 and Thakur 2022, p.77-78):

Table 1

Vowel length before voiced consonants and their aspirate sonorant counterparts

Position	Afimi	Gopal	Anand	Parames	Gajamo.	Jyoti	Total	Average	Word
ɑ before m-intervoc.	0.193519	0.154578	0.13854	0.170864	0.209451	0.229179	1.096131	0.182689	kʰɑ mi
ɑ before ŋ-intervoc.	0.147443	0.143021	0.101066	0.141149	0.164898	0.154039	0.851616	0.141936	kʰɑ ŋi
ɑ before m-final	0.38675	0.349805	0.333488	0.282699	0.270903	0.340864	1.964509	0.327418	jam
ɑ before ŋ-final	0.19827	0.214586	0.079041	0.156922	0.176676	0.275137	1.100632	0.183439	jaŋ
ɑ before n-intervoc.	0.234305	0.16706	0.155084	0.182903	0.209288	0.219908	1.168548	0.194758	kaŋ ɳ
ɑ before ŋ-intervoc.	0.145939	0.123701	0.105885	0.152805	0.172806	0.206479	0.907615	0.151269	kaŋ ɳ
ɑ before n-final	0.474382	0.261273	0.353499	0.344431	0.290537	0.409637	2.133759	0.355627	kaŋ
ɑ before ŋ-final	0.19974	0.177349	0.127474	0.160028	0.138398	0.25436	1.057349	0.176225	kaŋ
ʌ before ŋ-intervoc.	0.14329	0.161562	0.158831	0.169784	0.156705	0.174705	0.964877	0.160813	laŋ ɑ
ʌ before ŋ-intervoc.	0.117649	0.15476	0.10847	0.132483	0.117529	0.144968	0.775859	0.12931	laŋ ɑ
ʌ before ŋ-final	0.391237	0.257615	0.132359	0.156632	0.175725	0.238882	1.35245	0.225408	saŋ
ʌ before ŋ-final	0.129776	0.198412	0.084229	0.100862	0.079875	0.222661	0.815815	0.135969	saŋ
u before l-intervoc.	0.121224	0.122106	0.094147	0.086051	0.106525	0.132766	0.662819	0.11047	kul ɑ

u before ɹ- intervoc.	0.093655	0.11958 8	0.05485 1	0.071558	0.08755 5	0.09802 3	0.52523	0.08753 8	kuɹ a
a before l-final	0.434745	0.33834 8	0.34199 6	0.321311	0.34131 3	0.36253 5	2.14024 8	0.35670 8	kaɹ
a before ɹ-final	0.172723	0.16917 4	0.13582 1	0.1522	0.23486 4	0.21022	1.07500 2	0.17916 7	kaɹ
ʌ before r- intervoc.	0.247879	0.19376 1	0.18126 8	0.176668	0.14330 6	0.23305 9	1.17594 1	0.19599	kaɹi
ʌ before ɹ- intervoc.	0.104719	0.16017 6	0.13080 1	0.134421	0.11340 9	0.20140 9	0.84493 5	0.14082 3	kaɹi
a before r-final	0.502309	0.37942 4	0.41455 3	0.326235	0.31340 9	0.53382 1	2.46975 1	0.41162 5	gaɹ
a before ɹ-final	0.22589	0.22735 3	0.19105 5	0.21435	0.29497 3	0.48933 6	1.64295 7	0.27382 6	gaɹ
ʌ before ɹ- intervoc.	0.132677	0.15291 3	0.09274	0.130401	0.11266 3	0.23413 6	0.85553	0.14258 8	paɹ l
ʌ before ɹ̥- intervoc.	0.074938	0.12845 6	0.09039 2	0.113824	0.09764 1	0.24168 9	0.74694	0.12449	paɹ̥ l
ʌ before ɹ-final	0.49589	0.35578	0.29644 2	0.400233	0.31089 9	0.34178	2.20102 4	0.36683 7	gaɹ
ʌ before ɹ̥-final	0.166305	0.25347 5	0.18785 5	0.145155	0.18417 4	0.32940 8	1.26637 2	0.21106 2	gaɹ̥

Table 2

Length of voiced consonants and their aspirate sonorant counterparts:

Position	Afimi	Gopal	Anand	Parames	Gajamoti	Jyoti	Total	Average	Words
m- intervocalic	0.112886	0.101126	0.112422	0.092861	0.090919	0.129618	0.639832	0.106639	kʰami
ɱ- intervocalic	0.186607	0.106182	0.09993	0.10029	0.125901	0.154039	0.772949	0.128825	kʰami
m-final	0.291286	0.183721	0.125599	0.21442	0.202196	0.178839	1.196061	0.199344	jam
ɱ-final	0.249674	0.214586	0.14942	0.213222	0.318017	0.204824	1.349743	0.224957	jamɱ
n- intervocalic	0.066944	0.113499	0.112302	0.121549	0.124804	0.109115	0.648213	0.108036	kaɹal
ɳ- intervocalic	0.111128	0.144105	0.121928	0.118076	0.147845	0.161154	0.804236	0.134039	kaɹal
n-final	0.282587	0.209145	0.155325	0.264947	0.300353	0.205558	1.417915	0.236319	kan
ɳ-final	0.216763	0.177349	0.199245	0.224675	0.364153	0.32978	1.511965	0.251994	kaɳ
ɳ̥- intervocalic	0.159882	0.127549	0.099431	0.115762	0.182055	0.156119	0.840798	0.140133	laɳa
ɳ̥̥- intervocalic	0.138765	0.192174	0.120091	0.156922	0.198186	0.185856	0.991994	0.165332	laɳ̥a
ɳ̥-final	0.363366	0.288017	0.308036	0.393954	0.375413	0.312611	2.041397	0.340233	saɳ̥
ɳ̥̥-final	0.291306	0.265616	0.237044	0.239695	0.2556	0.300814	1.590075	0.265013	saɳ̥̥
l- intervocalic	0.13872	0.101964	0.095784	0.089674	0.140088	0.112913	0.679143	0.113191	kula
ɭ- intervoclic	0.114975	0.1284	0.094147	0.132247	0.106525	0.136488	0.712782	0.118797	kuɭa
l-final	0.272597	0.216861	0.134844	0.17968	0.179105	0.193855	1.176942	0.196157	kaɹ
ɭ-final	0.289047	0.274766	0.206175	0.234641	0.187737	0.294559	1.486925	0.247821	kaɭ
r- intervoclic	0.037116	0.041336	0.038107	0.049928	0.080487	0.120846	0.36782	0.061303	kaɹi
ɹ- final	0.1193	0.054253	0.056646	0.103696	0.098155	0.135232	0.567282	0.094547	kaɹi

intervocalic									
r-final	0.242238	0.156588	0.139386	0.095397	0.170019	0.086852	0.89048	0.148413	gar
r̥-final	0.279391	0.347805	0.19466	0.219061	0.23352	0.328342	1.602779	0.26713	gar̥
r̥-									
intervocalic	0.087223	0.058865	0.05987	0.064095	0.075109	0.048338	0.3935	0.065583	paɾal
r̥-									
intervocalic	0.090909	0.083321	0.086871	0.11935	0.13144	0.060422	0.572313	0.095386	paɾal
r̥-final	0.220732	0.132082	0.208487	0.122607	0.20614	0.193315	1.083363	0.180561	gaɾ
r̥̥-final	0.199566	0.205171	0.188941	0.222665	0.285554	0.242803	1.3447	0.224117	gaɾ̥̥

Table 1 shows that vowel length before modal sonorant consonant in each case is longer than that before its aspirate sonorant counterpart. Similarly, Table 1.2 shows that length of the modal sonorant consonant is shorter than the respective aspirate sonorant counterparts in each case in average.

Findings of the spectrograms lead towards aspirate character of Bhojpuri sonorants. Likewise, facts extracted from Table 1 and Table 2 lead towards voicelessness of the aspirate sonorants in Bhojpuri. Phonetically the aspirate sonorant consonants in Bhojpuri retains voicing in intervocalic position and drop it in the word-final position such as [m̥, m̥], [n̥, n̥], [l̥, l̥], [r̥, r̥], [ɾ̥, ɾ̥] and [ɽ̥, ɽ̥]. But they do not have phonemic contrasts. So, the devoicing aspirate sonorant consonants in Bhojpuri in this study have been presented as /m̥/, /n̥/, /l̥/, /r̥/, /ɾ̥/ and /ɽ̥/; which can be presented in Devanagari as /म̥/, /न̥/, /ल̥/, /र̥/, /ढ̥/ and /ड̥/ respectively.

Similarly, the minimal pairs between the modal sonorants and their devoicing aspirate counterparts show they are phonemic, as presented below:

(1) Minimal pairs of म/m/ and म̥/m̥/

Word-initial	Inter-vocalic	Word-final
Not found initially	खामी /k ^h ami/ 'fault'	जाम /jam/ 'germinate'
	खामी /k ^h am̥i/ 'pillar'	जाम̥ /jam̥/ 'jam'
	जमाई /jɳmai/ 'son-in-law'	जम /jɳm/ 'freeze (IMP)'
	जमाई /jɳm̥ai/ 'yawning'	जम̥ /jɳm̥/ 'death'
	गमार /gɳmar/ 'rural'	थम /t ^h ɳm/ 'tree'
	गमार /gɳm̥ar/ 'a species of wild wood'	थम̥ /t ^h ɳm̥/ 'wait (IMP)'

Example (1) demonstrates that /k^hami/ 'fault' and /k^ham̥i/ 'pillar', /jɳmai/ 'son-in-law' and /jɳm̥ai/ 'yawning', /gɳmar/ 'rural' and /gɳm̥ar/ 'a species of wild wood' differ semantically only because of [m] and [m̥] appeared in intervocalic positions whereas /jam/ 'germinate' and /jam̥/ 'jam', /jɳm/ 'freeze (IMP)' and /jɳm̥/ 'death', /t^hɳm/ 'tree' and /t^hɳm̥/ 'wait (IMP)' differ semantically only because of [m] and [m̥] appeared in word final positions.

So, based on acoustic analysis, longer vowel length before [m] than before [ṃ] and shorter articulation of [m] than that of [ṃ] in each case on average, they are the independent phonemes /m/ and /ṃ/ in Bhojpuri.

(2) Minimal pairs of न/n/ and ण/ṅ/

Word-initial	Inter-vocalic	Word-final
Not found initially	कानल /kanl/ 'to cry'	पेन /pen/ 'bottom'
	कानल /kaṅl/ 'to be yoked'	पेन /peṅ/ 'put on'
	अनार /ʌnar/ 'pomegranate'	कान /kan/ 'ear'
	अनार /ʌṅar/ 'dark'	कान /kaṅ/ 'shoulder'
	निनाइल /ninaɪl/ 'to be sleepy'	बान /ban/ 'habit'
	निनाइल /niṅaɪl/ 'to be cooked'	बान /baṅ/ 'tie up, barrage'

Example (2) demonstrates that /kanl/ 'to cry' and /kaṅl/ 'to be yoked', /ʌnar/ 'pomegranate' and /ʌṅar/ 'dark', /ninaɪl/ 'to be sleepy' and /niṅaɪl/ 'to be cooked' differ semantically only because of [n] and [ṅ] appeared in intervocalic positions whereas /pen/ 'bottom' and /peṅ/ 'put on', /kan/ 'ear' and /kaṅ/ 'shoulder', /ban/ 'habit' and /baṅ/ 'tie up, barrage' differ semantically only because of [n] and [ṅ] appeared in word final positions.

So, on the basis of acoustic analysis, longer vowel length before [n] than before [ṅ] and shorter articulation of [n] than that of [ṅ] in each case in average, they are the independent phonemes /n/ and /ṅ/ in Bhojpuri.

(3) Minimal pairs of ड/ḍ/ and ङ/ṅ/

Word-initial	Inter-vocalic	Word-final
Not found initially	लाडा /laḍa/ 'rude'	सड /sḍ/ 'friendship'
	लाडा /laṅa/ 'leapt'	सड /sṅ/ 'union'
	सडे /sḍe/ 'together'	जड /jḍ/ 'rustication'
	सडे /sṅe/ 'unitedly'	जड /jṅ/ 'thigh'
	पड़त /pḍat/ 'being trimmed'	लाड /laḍ/ 'a stroke in animal sex for impregnation'
	पड़त /pṅat/ 'meal among Vaishnavas'	लाड /laṅ/ 'leap (IMP)'

Example (3) demonstrates that /laḍa/ 'rude' and /laṅa/ 'leapt', /sḍe/ 'together' and /sṅe/ 'unitedly', /pḍat/ 'being trimmed', /pṅat/ 'meal among

Vaishnavas' differ semantically only because of [ɳ] and [ɳ̌] appeared in intervocalic positions whereas /sʌɳ/ 'friendship' and /sʌɳ̌/ 'union', /jʌɳ/ 'rustication' and /jʌɳ̌/ 'thigh', /lʌɳ/ 'a stroke in animal sex for impregnation' and /lʌɳ̌/ 'leap (IMP)' differ semantically only because of [ɳ] and [ɳ̌] appeared in word final positions.

So, on the basis of acoustic analysis, longer vowel length before [ɳ] than before [ɳ̌] and shorter articulation of [ɳ] than that of [ɳ̌] in each case in average, they are the independent phonemes /ɳ/ and /ɳ̌/ in Bhojpuri.

(4) Minimal pairs of ल/l/ and ल̌/ľ/

Word-initial	Inter-vocalic	Word-final
Not found initially	कुला /kula/ 'gargling'	काल /kal/ 'time, death'
	कुला /kuḷa/ 'hip'	काल /kaḷ/ 'yesterday'
	आला /ala/ 'stethoscope'	मेल /mel/ 'unity, company'
	आला /aḷa/ 'a hero in Bhojpuri folklore'	मेल /meḷ/ 'tread'
	चेलवा /celwa/ 'the disciple'	किल /kil/ 'a peg or a nail'
	चेलवा /ceḷwa/ 'a fish'	किल /kiḷ/ 'hump of a bullock'

Example (4) demonstrates that /kula/ 'gargling' and /kuḷa/ 'hip', /ala/ 'stethoscope' and /aḷa/ 'a hero in Bhojpuri folklore', celwa/ 'the disciple', /ceḷwa/ 'a fish' differ semantically only because of [l] and [ḷ] appeared in intervocalic positions whereas /kal/ 'time, death' and /kaḷ/ 'yesterday', /mel/ 'unity, company' and /meḷ/ 'tread', /kil/ 'a peg or a nail' and /kiḷ/ 'hump of a bullock' differ semantically only because of [l] and [ḷ] appeared in word final positions.

So, on the basis of acoustic analysis, longer vowel length before [l] than before [ḷ] and shorter articulation of [l] than that of [ḷ] in each case in average, they are the independent phonemes /l/ and /ḷ/ in Bhojpuri.

(5) Minimal pairs of र/r/ and र̌/ř/

Word-initial	Inter-vocalic	Word-final
Not found initially	पारा /para/ 'mercury'	गर /gar/ 'neck'
	पारा /paṛa/ 'thickening of clouds'	गर /gaṛ/ 'create, uproot'
	मारा /mara/ 'dead'	गार /gar/ 'squeeze'
	मारा /maṛa/ 'parched rice of a paddy like grain locally known as China'	गार /gaṛ/ 'thick (liquid)'
	करी /kari/ 'will do'	पर /par/ 'lie, a locative marker'
	करी /kaṛi/ 'curry, curry of bean's and curd'	पर /paṛ/ 'last year'

Example (5) demonstrates that /para/ 'mercury' and /paṛa/ 'thickening of clouds', /mara/ 'dead' and /maṛa/ 'parched rice of a paddy like grain locally known as China', /kari/ 'will do' and /kṛi/ 'curry, curry of bean's and curd' differ semantically only because of [r] and [ṛ] appeared in intervocalic positions whereas /gar/ 'neck' and /gṛ/ 'create, uproot', /gar/ 'squeeze' and /gṛ/ 'thick (liquid)', /pār/ 'lie, a locative marker' and /pṛ/ 'last year' differ semantically only because of [r] and [ṛ] appeared in word final positions.

So, on the basis of acoustic analysis, longer vowel length before [r] than before [ṛ] and shorter articulation of [r] than that of [ṛ] in each case in average, they are the independent phonemes /r/ and /ṛ/ in Bhojpuri.

(6) Minimal pairs of ड/ḍ/ and ढ/ḍ̥/

Word-initial	Inter-vocalic	Word-final
Not found initially	पडल /pḍal/ 'to lie down'	गड /gḍ/ 'prick'
	पढल /pḍ̥al/ 'to read'	गढ /gḍ̥/ 'ceyfort'
	ओडाई /oḍai/ 'defence'	ओड /oḍ/ 'defend (IMP)'
	ओढाई /oḍ̥ai/ 'covering'	ओढ /oḍ̥/ 'cover (IMP)'
	ओडनी /oḍni/ 'a musical instrument'	पड /pḍ/ 'lie down (IMP)'
	ओढनी /oḍ̥ni/ 'shawl'	पढ /pḍ̥/ 'read (IMP)'

Example (6) demonstrates that /pḍal/ 'to lie down' and /pḍ̥al/ 'to read', /oḍai/ 'defence' and /oḍ̥ai/ 'covering', /oḍni/ 'a musical instrument' and /oḍ̥ni/ 'shawl' differ semantically only because of [ṛ] and [ṛ̥] appeared in intervocalic positions whereas /gḍ/ 'prick' and /gḍ̥/ 'fort', /oḍ/ 'defend (IMP)' and /oḍ̥/ 'cover (IMP)', /pḍ/ 'lie down (IMP)' and /pḍ̥/ 'read (IMP)' differ semantically only because of [ṛ] and [ṛ̥] appeared in word final positions.

So, on the basis of acoustic analysis, longer vowel length before [ṛ] than before [ṛ̥] and shorter articulation of [ṛ] than that of [ṛ̥] in each case in average, they are the independent phonemes /ṛ/ and /ṛ̥/ in Bhojpuri.

Thus, the model sonorant consonants and their aspirate counterparts are devoicing aspirate and phonemic in Bhojpuri.

Word-stress

Typologically maintained stress-pattern

Bhojpuri is a New Indo-Aryan Language spoken in Madhesh, Bagmati, Gandaki and Lumbini states² of Nepal as well as in the adjacent Indian territories of Western Bihar and Eastern Uttar Pradesh indigenously. Certainly it maintains the

2. According to the authorized version of the Constitution of Nepal.

New Indo-Aryan stress-pattern. The stressed syllable in Devnagari has been marked by (◌̄) on the stressed syllable and in IPA it has been marked by (ˈ) as the stress sign.

Stress on the penultimate syllable

The stress falls on the penultimate syllable if it is long:

- (7) घोड़ा /'gōɽa/ 'horse', कौरा /'kora/ 'lap', पानी /'pani/ 'water' राजा /'raja/ 'king', जनेओ /jɳ'neo/ 'sacred thread', पखेओ /pɳ'kʰeo/ 'medicinal drink for cattle' (nouns).
- (8) छोटका /'cʰotka/ 'the small one', बड़का /'bɽka/ 'the big one', लामा /'lama/ 'long', पाला /'pala/ 'distant' or 'cold' (adjectives).
- (9) हिकाउत /hi'kaut/ 'near' लमहारा /lɳm'hara/ 'far', बाहर /'bahɽ/ 'outside', भीतर /'bitɽ/ 'inside' (adverbs).

Stress on antepenultimate syllable

The stress falls on the antepenultimate syllable if it is longer than the penultimate one:

- (10) कपड़ा /'kɽɽa/ 'cloth', खपड़ा /'kʰɽɽa/ 'tile', चंदरा /'cɽɽa/ 'shawl' or 'metal sheet' पपनी /'pɽɽni/ 'eye-lash', ककना /'kɽkna/ 'wrist-ring', गजरा /'gɽɽa/ 'carrot' (nouns)
- (11) फटहा /'pʰɽɽha/ 'rude (male)', फटही /'pʰɽɽhi/ 'rude (female), कठही /'kɽɽhi/ 'wooden' पनिगर /'pɽɽnigɽ/ 'sharp' or 'quick' (adjectives)
- (12) बिहने /'bihne/ 'at dawn' or 'tomorrow', सँझिआ /'sɽɽjia/ 'at dusk', पँरसो /'pɽɽɽso/ 'the day before' or 'the day after' (adverbs)

Stress on compound words

In compound words, the stress is noticed on the second word:

- (13) दानापानी /dana'pani/ 'food and water', काँपीकलम /kãpi'kɽɽm/ 'exercise book and pen', खेतबारी /kʰet'bari/ 'farm and garden', फूलबारी /pʰul'bari/ 'garden', पानसाला /pan'sala/ 'watering-place' (nouns)
- (14) पानसाला /pan'sala/ 'five-year', दूदिनहाँ /du'dinɽhã/ 'two-day', एकजनिआ /ek'jɽɽnia/ 'single bed' (adjectives)

Stress-shift in Bhojpuri

The stress-shift causing alteration of word-class and semantics was being overlooked until Lohar (2020) caught sight on the phenomenon. Lohar (2020, p.122) presents stress-shift in Bhojpuri as phonemic. The prominent word classes of nouns, adjectives and adverbs turn into causative verbs mainly into imperative mood, both

functionally and semantically, if primary stress shifted to the final syllable either from its initial or from its medial one.

Noun to verb

Abundants of Bhojpuri nouns are changed into verb class with semantic change due to shift of stress from the initial or medial syllable to the ultimate one. Consider the following examples (15-19).

(15) a. अस सौटा मारेम जे धरती ध लेबस ।

as soʈa marem je ɖarti ɖʌ lebʌ
 as 'soʈa mar-em je ɖarti ɖʌr le-bʌ
 so stick hit-FUT.H COMP land keep take-2.FUT.MH
 'I'll hit you with a stick so that you will be layng on the land.'

b. कसरत करेलस का? बहुत सौटा गइल बाडस ।

kasrat kʌrelʌ ka bʌhut soʈa gʌil
 kasrat kʌr-e-lʌ ka bʌhut so'ʈa ja-il
 physical exercise do-PRES-2.MH what very be slim go-INF
 baʈʌ
 ba-ʈʌ
 be-2.PRES MH

'Do you exercise physically? You have been so slim now.'

(16) a. अभिन बतिआ बा, मत तोड़स ।

ʌʃin bʌtia ba mat toʈʌ
 ʌʃin 'bʌtia ba mat toʈ-ʌ
 now tender fruit be.3SG.PRES NEG pluck-IMP.MH
 'The fruit is tender, don't pluck it now.'

b. अभिन ब्यस्त बानी, ना बतिआ ।

ʌʃin byʌst bani na bʌtia
 ʌʃin byʌst ba-ni na bʌti'a
 no busy be.PRES-H NEG talk-IMP.MH
 'I'm busy enough, don't talk now.'

(17) a. अगुआ के खराब काम ना करेके चाहीं ।

ʌgʌa ke kʰʌrab kam na kʌreke caɦĩ
 'ʌgʌa ke kʰʌrab kam na kʌr-e-ke caɦ-ĩ
 leader DAT bad work NEG do-PUR-INF want-3.PRES
 'The leader should not do wrong.'

b. बहुत पाछा बाडस, अगुआ जा ।

bʌhut paʈʌ baʈʌ ʌgʌa ja
 bʌhut paʈʌ ba-ʈʌ ʌgu'a ja
 very behind be-2.PRES.MH be in front go-IMP.MH

'You are lagging far behind, come in front.'

- (18) a. तोहरा केहुनिआ में का भइल बा ? मोड़लही बाड़स ।
 tohra kehunia mē ka ḥail ba
 tohr-a ke'huni-a mē ka ho-il ba
 2SG.GEN-DEF elbow-DEF in what be-PRF be.3.PRES
 moṛlhi baṛa
 moṛ-l-hi ba-ṛa
 bend-PRF-EMPH be-2.PRES.MH
 'What's happened in your elbow ? You are still bending.'

- b. बड़ा लबलब कइले बा, केहुनिआ ना दे ।
 baṛa lɒlɒl kɒile ba kehunia na
 baṛa lɒlɒl kɒr-il-e ba ke'huni'a na
 very mischief do-PRF-SEQ be.3SG.PRES hit with elbow NEG
 de
 de
 give-IMP
 'He has been over mischievous, better you hit him with elbow.'

- (19) a. कउआ करकराता ।
 kɒa kɒrkɒrɒtɒ
 'kɒa kɒrkɒr-ɒtɒ ba
 crow crow-IMPF be-3SG.PRES
 'The crow is crowing.'
- b. रामु बेमार बा, कउआता घरे ।
 ramu bɛmar ba kɒɒtɒ
 ramu bɛmar ba kɒ'a-ɒtɒ ba
 Ramu sick be. 3SG.PRES feel lonely-IMPF be. 3SG.PRES
 ḡare
 ḡar-e
 home-CLT
 'Ramu is sick, feeling lonely at home.'

As presented in (15-19), सौटा /'soʈa/ 'a short stick' and सोटा /soʈa/ 'be slim'in (15a-b), बतिआ /'bɒtiya/ 'a small tender fruit' and बतिआ /bɒti'ya/ 'talk'in (16a-b), अगुआ /'ɒgɒa/ 'leader' and अगुआ /ɒgɒ'a/ 'be in front' in (17a-b), केहुनिआ /ke'huniya/ 'the elbow' and केहुनिआ/ke'huni'ya/ in (18a-b) 'hit with elbow' as well as कउआ /'kɒa/ 'crow' and कउआ /kɒ'a/ 'fell lonely' (in 19a-b) are the minimal pairs of the phonemic contrasts only due to stress-shift that change the nouns into verbs in Bhojpuri.

Adjective to verb

Stress-shift can also change adjectives into verb class semantically. Consider the examples (20-24).

- (20) a. गाँव के किसान सौझिआ होला ।
gāo³ ke kisan sojia hola
gāo ke kisan 'sojia ho-l-a
village POSS peasant innocent be-INF.3SG.PRES
'The rural peasants are innocent.'
- b. आर सौझिआ दे, झगड़ा ना होई ।
ar sojia de jʌgʌɾa na hoi
ar soji'a de jʌgʌɾa na ho-i
boundary straighten give.IMP quarrel NEG be-3SG.FUT
'Straighten the boundary, there won't be any quarrelling.'
- (21) a. बानर बड़ा टेढ़िआ होला ।
banar bʌɾa tẽɽia hola
banar bʌɾa 'tẽɽia ho-l-a
monkey very arrogant be-INF-3SG.PRES
'The monkeys are very arrogant.'
- b. गाँव में सड़क टेढ़िआ जाला ।
gāo mẽ sʌɾk tẽɽia jala
gāo mẽ sʌɾk tẽɽi'a ja-l-a
village LOC road curve go-INF-3SG.PRES
'The road is curved in the village.'
- (22) a. हम त पछुआ आदमी बानी ।
ɦʌm tʌ pʌcʰua admɪ bani
ɦʌm tʌ 'pʌcʰua admɪ ba-ni
1SG.NOM PART backward man be-PRES.H
'I'm a backward person.'
- b. तू काहे पछुआ गइलऽ ह ?
tu kaɦe pʌcʰua gʌilʌ ɦʌ
tu kaɦe pʌcʰu'a ja-il-ʌ ɦʌ
2SG why lag behind go-PRF-2.PRES be.3.PRES
'Why have you lagged behind?'
- (23) a. उलटा सरसो से झारफूँक होला ।
ulʈa sʌɾso se jʌɾpʰũk hola
'ulʈa sʌɾso se jʌɾpʰũk ho-l-a

3. व in word initial or inter-vocalic position is pronounced as /wʌ/ but in the final position it is pronounced as /o/.

reverse mustard INS witch-chant be-INF-3SG.PRES
'Mustard produced in reverse order on plants are used for witch-chant.'

b. खा लेले, पाता उलटा दे।

k ^h a	lele	pata	ul ^ʈ a	de
k ^h a	le-le	pata	ul ^ʈ a	de
eat	take-take	leaf-plate	turn over	give-IMP

'You have taken your meal, turn over the leaf-plate.'

(24) a. तोहर केश बहुत करिआ बा।

toɦar	kes	b ^h ut	kari ^a	ba
toɦar	kes	b ^h ut	'kari ^a	ba
2SG.GEN	hair	very	black	be-3SG.PRES

'Your hair is so black.'

b. का करेलस? केशवा करिआ गइल।

ka	karel ^ə	keswa	kari ^a	g ^ə il
ka	k ^ə r-e-l ^ə	kes-wa	kari ^a	ja-il
what	do-PUR-2.PRES.MH	hair-DEF	blacken	go-3SG.PST

'What do you do? Your hair got blackened!'

Going through the instances (20-24), सौझिआ /'sojia/ 'innocent' and सोझिआ /'soji'a/ 'straighten' in (20a-b), टैडिआ /'tẽɽia/ 'arrogant' and टैडिआ /'tẽɽi'a/ 'curve' in (16a-b), in (21a-b) पछुआ /'pɕ^hua/ 'backward' and पछुआ /'pɕ^hu'a/ 'lag behind' in (22a-b), उलटा /'ul^ʈa/ 'reverse' and उलटा /ul^ʈa/ 'turn over' in (23a-b) as well as करिआ /'kari^a/ 'black' and करिआ /kari^a/ 'blacken' in (24a-b) clarify the they are the minimal pairs of phonemic contrast only due to stress-shift, adjectives being converted into verbs.

Adverb to verb

Like nouns and adjectives, adverbs are also found changed into verb class semantically due to stress-shift from initial or medial syllable to the ultimate one. Consider the examples (25-29).

(25) a. जहिआ मन करे तहिआ आवस।

jaɦia	m ^ə n	k ^ə re	taɦia	a ^ə wa
jaɦia	m ^ə n	k ^ə r-e	'taɦia	a-wa
What day	will	do-3.FUT	that day	come-IMP.MH

'The day you wish, come.'

b. रोपेआ तहिआके धरस, काम लागी।

ropea	taɦiake	ɖ ^ə r- ^ə	kam	lagi
ropea	taɦi'a-ke	ɖ ^ə r- ^ə	kam	lag-i

- Rupee press-SEQ kep-IMP.MH work use-3SG.FUT
'Stock the paper-notes pressing them for use in future.'
- (26) a. निअरा आके कहऽ, कम सुनेनी ।
 niara ake kaha kama suneni
 'niara a-ke kaha-a kama sun-e-ni
 near come-SEQ say-IMP.MH less hear-PRES-H
 'Tell me coming closer, I hear less.'
- b. निमन से पढऽ, परीक्षा निअरा गइल ।
 nimana se paḷa parikha niara gail
 nimana se paḷ-a parikha niara ja-il
 good INS read-IMP.MH examination be close go-3SG.PST
 'Study well, the examination is closer now.'
- (27) a. काहे बहारा खडा बाइऽ ?
 kahe bahara kaha baha
 kahe 'bahara kaha ba-a
 why outside standing be-2.PRES
 'Why are you standing outside?'
- b. बेरा हो गइल, बैल बहारा द ।
 bera ho gail bel bahara da
 bera ho ja-il bel bahara da
 time be go-3.PST bullock take out give-IMP
 'It's the time, take the bullocks out.'
- (28) a. उपरा मत बइठ, गिर जइबे ।
 upara mat bait gir jibe
 'upara mat bait gir ja-i-be
 up NEG sit fall go-FUT-3SG
 'Don't sit upside, you will be fallen.'
- b. गाई के दूध उपरा दे ।
 gai ke dud upara de
 gai ke dud upara de
 cow POSS milk avail give-IMP
 'Avail me cow-milk.'
- (29) a. कौना बेरा अइबऽ ?
 kona bera iba
 kon-a 'bera a-i-ba
 which-DEF time come-FUT-2.FUT
 'At what time will you come?'
- b. घाम उगल, पसई बेरा दे ।
 gam ugal pasai bera de

g̃am ug-ʌl pʌsʌi be'ra de
 sun rise-3SG.PST ripened crops dry give-IMP
 'The sun rose, dry the ripened crops.'

c. ई झार निमन बा, बेरा दीं।

i jar nimʌn ba bera dī
 i jar nimʌn ba be'ra de-ī
 PROX plant good be-3SG.PRES exclude give-IMP.H
 'This plant is attractive, exclude it form others.'

Going through the examples (25-29), तहिआ /'tʌhia/ 'that day' and तहिआ /tʌhi'a/ 'press'in (25a-b), निअरा /'niʌra/ 'near' and निअरा /niʌ'ra/ 'reach closer'in (26a-b), बेहरा/'bʌhʌra/ 'outside' and बेहरा /bʌhʌ'ra/ 'pull out'in (27a-b), उपरा /'uʌra/ 'up'and उपरा /uʌ'ra/ 'avail' in (28a-b) as well as बेरा /'bera/ 'at the moment' and बेरा /be'ra/ 'dry'or 'exclude' in (29a-b) demonstrate stress-shift is phonemic and the adverbs are changed into verb class semantically in Bhojpuri.

The verbs derivated by the stress-shift have been observed as the bare-stem form, serving as the most direct, least polite, imperative speech act as Givón (2001b:305) mentions.

CONCLUSION

This article discusses how devoicing aspirate sonorants serve as phonemic counterparts to their model sounds. Empirical observations have led to the recommendation of using Devanagari characters such as म, न, ङ, ढ, र, and ल. These additions aim to make the Bhojpuri writing system more economical and simpler. The article also presents the stress patterns of Bhojpuri, demonstrating that the language maintains its typological characteristics to a significant extent. Additionally, it notes that stress-shift in Bhojpuri is phonemic. The article highlights how nouns, adjectives, and adverbs can be converted into verbs, often with semantic changes. It suggests that stress-shift should be studied carefully, and further exploration is needed to understand its effects on New Indo-Aryan languages.

ABBREVIATIONS

1	First person	INS	Instrumental
2	Second person	LOC	Locative
3	Third person	MH	Mid-honorific
CLT	Clitic	NEG	Negative
COMP	Complementizer	PART	Particle
DAT	Dative	POSS	Possessive
DEF	Definitizer	PRES	Present tense

EMPH	Emphatic	PRF	Perfective
FUT	Future tense	PROX	Proximant
GEN	Genitive	PST	Past tense
H	Honorific	PUR	Purpusive
IMP	Imperative	SEQ	Sequential participial
IMPF	Imperfective	SG	Singular
INF	Infinitive		

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