

# ILLUSTRATIONS OF THE IPA

## **Punjabi (Lyallpuri variety)**

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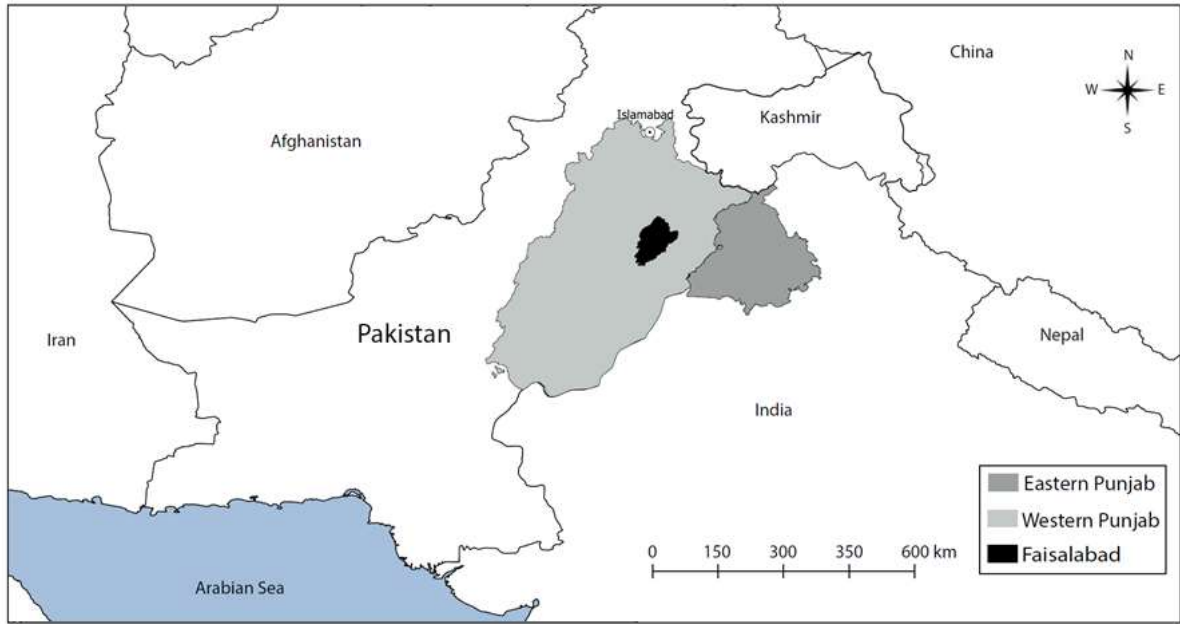
Punjabi (Western, ISO-639-3 pnb) is an Indo-Aryan language (Indo-European, Indo-Iranian) spoken in Pakistan and India, and in immigrant communities in the UK, Canada, USA, and elsewhere. In terms of number of native speakers, it is ranked 10<sup>th</sup> among the world's languages, with more than 100 million speakers (Lewis, Simons & Fennig 2016). Aspects of the phonology of different varieties of Punjabi have been described in Jain (1934), Arun (1961), Gill & Gleason (1962), Singh (1971), Dulai & Koul (1980), Bhatia (1993), Malik (1995), Shackle (2003), and Dhillon (2010). Much of this literature is focused on Eastern varieties, and the phonology of Western Punjabi dialects has received relatively less attention (e.g., Bahri 1962, Baart 2003, 2014).

The lexicon of Punjabi includes loanwords from Arabic, English, Hindi-Urdu, Persian, Sanskrit, Turkish, and other contact languages. Most loanwords are fully integrated into the native phonology, other than some recent English loanwords (related to science and technology) that are yet to be adapted. The word *Punjabi* itself is a combination of two Persian words, /pəɳdʒ/ پنج 'five' and /ab/ آب 'water', which literally means *the land of five rivers* (Shackle 2003). Punjabi is written in two different scripts: Gurmukhi (mainly used in India), and Shahmukhi, a modified Perso-Arabic script frequently employed by Punjabi speakers in Pakistan.

The many dialects of Punjabi are broadly classified into two groups: Eastern and Western. The Eastern dialects are primarily spoken in the Indian state of Punjab, whereas the Western dialects cover the area of Punjab, Pakistan (Singh 1971, 2006); however, the distribution of speakers and varieties is more complicated (Shackle 1979). In 1947, during the partition of India and Pakistan, a large number of Punjabi speakers migrated from India to Pakistan and settled around Lahore, Sahiwal, Faisalabad, and Gujranwala. Similarly, Punjabi speakers from the Punjab state of Pakistan moved to India. The term Lahnda (also Lahanda, Lahandi, or Lahndi, meaning Western) has been used as an umbrella term covering North-Western (Hindko, Peshawari), North-

Eastern (Pothwari, Awankari), and Southern (Siraiki or Multani) dialects that differ from the ‘Punjabi proper’ spoken in the Central and Eastern Punjab (Grierson 1916, Bhardwaj 2016). The status of Lahnda has been questioned, and the boundary between these varieties and Punjabi is unclear (Bhardwaj 2016, Shackle 1979, 2006, Bhatia 2006). Siraiki, that was once classified as a variety of Lahnda, is now considered a separate language, characterized by a five-way laryngeal contrast (/p p<sup>h</sup> b b<sup>h</sup> b/) (Shackle 1977, 2003). Dialects of Hindko also differ phonologically from each other, and from other Lahnda languages (Shackle 2006).

This paper describes the variety of Punjabi known as *Lyallpuri*, spoken in the urban areas of Faisalabad (formerly Lyallpur), as demonstrated by a 30-year-old male native speaker (the first author). The informant was born and raised in a Punjabi-speaking environment in Faisalabad, and Lyallpuri is his first language. He is literate in Punjabi (Shahmukhi script) and has used Punjabi as his primary language for most of his life. The informant also speaks Urdu and English, and has lived outside Pakistan as an adult, but regularly communicates with other Punjabi speakers. All analyses are based on recordings of this speaker. *Lyallpuri* forms part of the chain of Western dialects of Punjabi, and closely resembles varieties of Punjabi spoken in Lahore, Sahiwal, and Gujranwala, although the differences between these have not been systematically examined.



**Figure 1** Location of Eastern and Western Punjab. The Lyallpuri variety of Punjabi is spoken in Faisalabad (Western Punjab), Pakistan.

## Consonants

	Bilabial	Labiodental	Dental	Alveolar	Retroflex	Palatal	Velar	Glottal
Plosive	p p <sup>h</sup> b		t̪ t̪ <sup>h</sup> d̪		ʈ ʈ <sup>h</sup> ɖ	tʃ tʃ <sup>h</sup> dʒ	k k <sup>h</sup> g	
Nasal	m			n	ɳ			
Tap or Flap				r	ɽ			
Fricative		(f) (v)		s (z)		ʃ	(x) (ɣ)	h
Approximant		ʋ				j		
Lateral approximant				l	ɭ			

Lyallpuri Punjabi uses 32 consonants, including five fricatives found only in loanwords (in parentheses). Most consonants are contrastive in word-initial, word-medial, and word-final

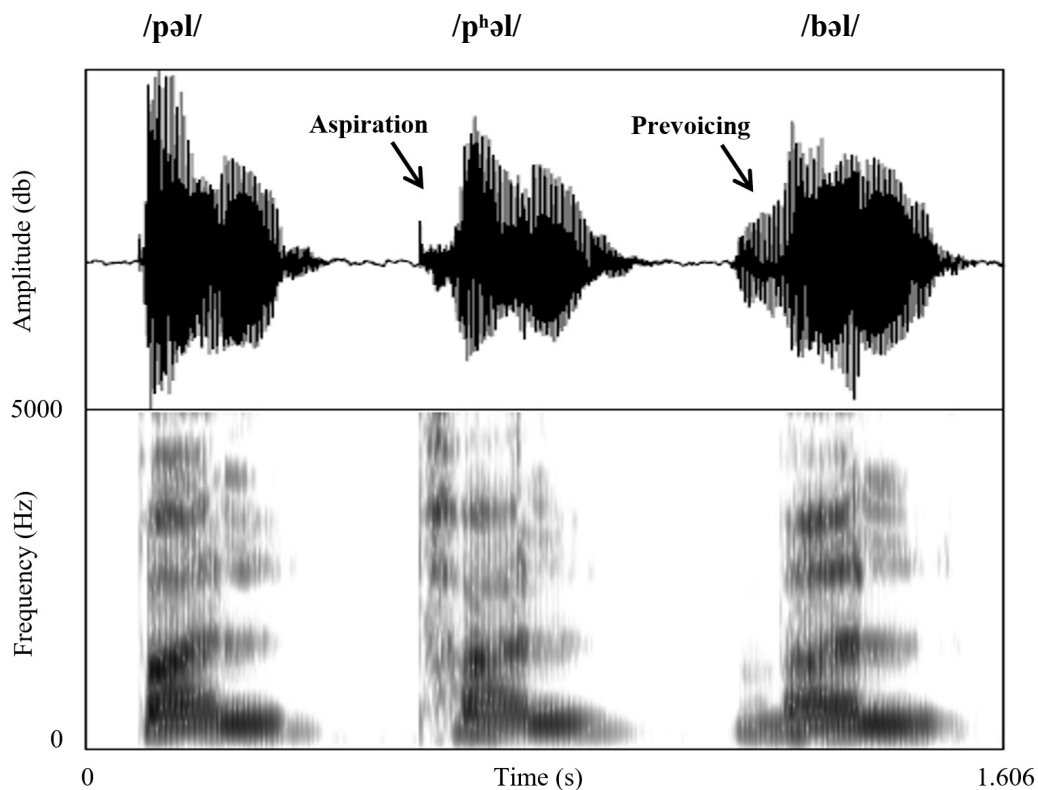
positions. The consonants in parentheses are contrastive in our informant's speech but they are generally absent from the speech of Lyallpuri speakers residing in rural areas.

	Initial		Medial		Final				
p	par	پار	cross	ʃ <sup>h</sup> apa	چھاپا	raid	nap	ناپ	measurement
p <sup>h</sup>	p <sup>h</sup> aɾ	پھاڑ	torn	nep <sup>h</sup> a	نیپھا	waistband	pàp <sup>h</sup>	پاپھ	steam
b	bár	بار	outside	baba	بابا	an old man	ɖəb	دب	bury
t̥	ʈal	تال	beat (n.)	k <sup>h</sup> aɽa	کھاتا	ledger	baɽ	بات	talk
t <sup>h</sup>	ʈ <sup>h</sup> al	تھال	platter	haɽ <sup>h</sup> i	ہاتھی	elephant	saɽ <sup>h</sup>	ساتھ	companionship
ɖ	ɖal	دال	lentil	saɖa	سادھ	simple	jaɖ	یاد	remember
t̥	ʈal	ٹال	stop	kàɽa	کاٹا	loss	ʃfaɽ	چاٹ	fruit dish
t <sup>h</sup>	t <sup>h</sup> ər	ٹھر	cold	maɽ <sup>h</sup> a	ماٹھا	weak	baɽ <sup>h</sup>	باٹھ	sixty-two
ɖ	ɖak	ڈاک	mail	saɖa	ساڈا	ours	laɖ	لاڈ	love
ʃ	ʃal	چال	gait	gaɽfa	گاچا	fodder	kəɽʃ	کچ	glass
ʃ <sup>h</sup>	ʃ <sup>h</sup> al	چھال	jump	bəɽ <sup>h</sup> a	بچھا	spread	kəɽ <sup>h</sup>	کچھ	armpit
ɖʒ	ɖʒal	جال	net	baɖʒa	باجا	tuba	kaɖʒ	کاج	buttonhole
k	kal	کال	call	ɖaka	ڈاکا	robbery	pak	پاک	clean
k <sup>h</sup>	k <sup>h</sup> aɖ	کھاد	fertilizer	dak <sup>h</sup> ã	داکھاں	raisings (pl.)	rək <sup>h</sup>	رکھ	put
g	gal	گال	abuse	baɖã	باگاں	gardens (pl.)	sag	ساگ	name of a dish
m	mal	مال	stock	mama	ماما	maternal uncle	nam	نام	name
n	nal	نال	with	dana	دانا	grain	nan	نان	bread
ŋ	-	-	-	kaŋa	کانا	one-eyed	hoŋ	ہُن	now
r	raɽ	رات	night	sara	سارا	a female name	ʃfaɽ	چار	four
ɽ	-	-	-	saɽa	ساڑا	jealousy	saɽ	ساڑ	burnt
f	fal	فال	augury	səfa	صفحہ	page	saf	صاف	clean
v	var	وار	attack	ravi	راوی	river name	-	-	-
s	sal	سال	year	masa	ماسا	little	ras	راس	suitable
z	zaɽ	ذات	caste	məza	مزہ	enjoy	raz	راز	secret
ʃ	ʃal	شال	shawl	maɽfa	ماشفا	subunit of gram	laɽ	لاش	corpse
x	xas	خاص	important	ʃaxã	شاخاں	branches	ʃax	شاخ	branch
ɣ	ɣar	غار	cave	naya	ناغہ	absence	ɖay	داغ	stain
h	hal	حال	condition	-	-	-	-	-	-
v	vaɽ	واڑ	push	pava	پاوا	cot leg	-	-	-
j	jar	یار	friend	maja	مایا	starch	-	-	-
l	lal	لال	red	ʈala	تالا	lock	pal	پال	raise
l̥	-	-	-	paɽa	پالا	cold	məɽ	مل	rub

## Obstruents

Lyallpuri Punjabi has a three-way laryngeal contrast in plosives (voiceless unaspirated, voiceless aspirated, and voiced unaspirated) at five places of articulation (labial, dental, retroflex, palatal and velar). The three-way laryngeal contrast is illustrated in a series of labial plosives in Figure 2.

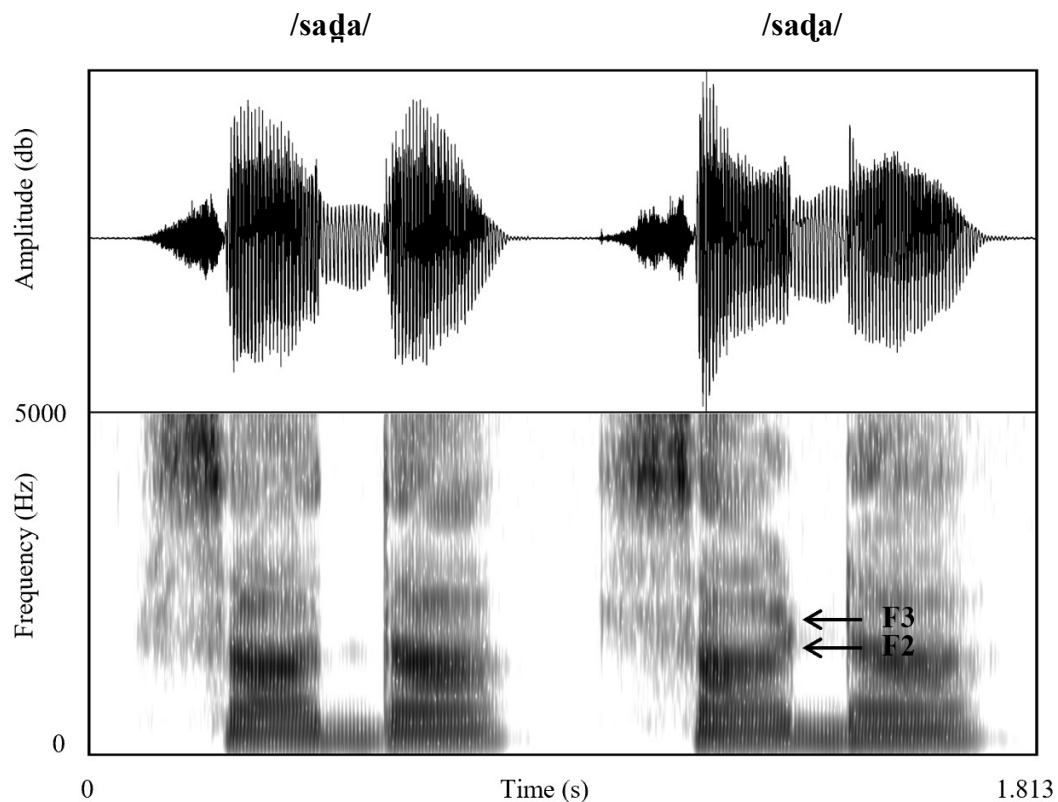
Plosives are contrastive in all word-positions.



**Figure 2** Waveforms and spectrograms of word-initial labial stops, illustrating the 3-way laryngeal contrast. Left-to-right: /pəl/  $\text{پل}$  ‘moment’, /pʰəl/  $\text{پهل}$  ‘fruit’, and /bəl/  $\text{بل}$  ‘curl’. Aspirated release (/pʰ/) and prevoiced (/b/) intervals are indicated.

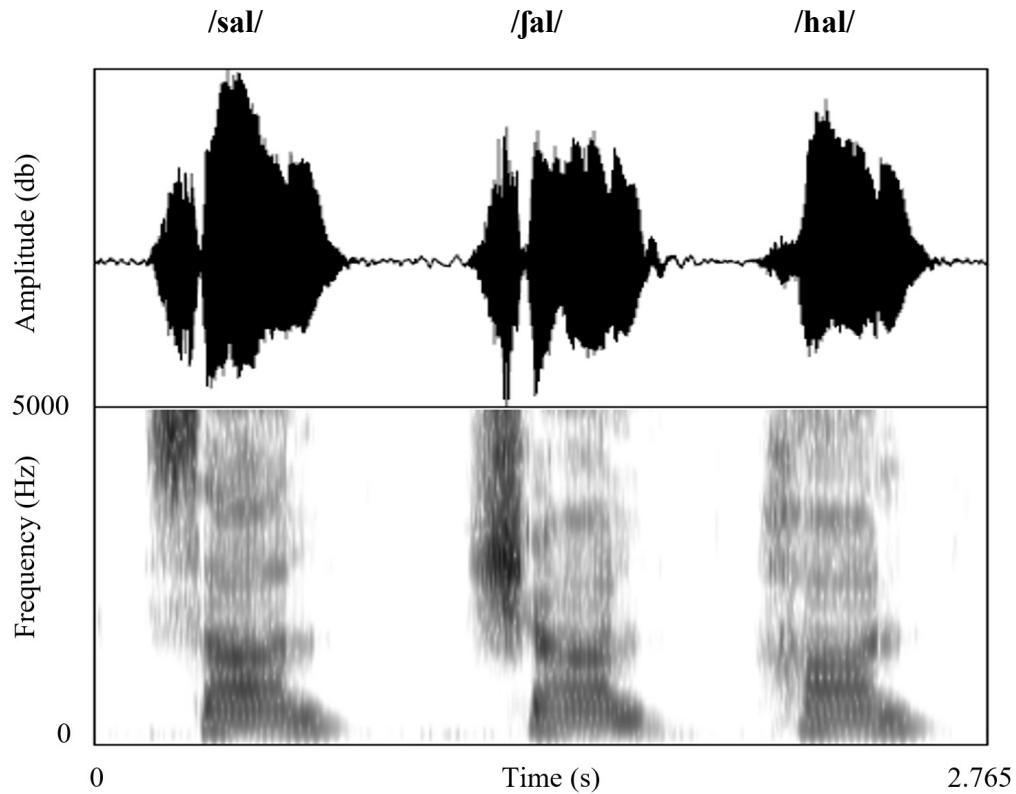
There is a three-way coronal contrast in plosives: dental, retroflex, and palatal (e.g., /t̪ t̪ʰ t̪ʰ/). /t̪ʰ-t̪ʰ-dʒ/ have been characterized as palatal (Arun 1961, Bhatia 1993) and palatoalveolar (Dulai & Koul 1980). Retroflex stops are characterized by shorter closure duration, shorter release burst duration, and greater convergence of second and third formants from preceding vowels, compared to their

dental counterparts (Hussain, Proctor, Harvey & Demuth 2017). Retroflex and dental stops produced in intervocalic contexts are illustrated in Figure 3.



**Figure 3** Waveforms and spectrograms of word-medial voiced dental and retroflex stops. Left-to-right: /saḏa/ ساده ‘simple’, /saḏa/ سائدا ‘ours’.

Eight fricatives are contrastive in the idiolect of our informant: /f v s z ʃ x ɣ h/. Labiodental /f v/, voiced alveolar /z/, and velar fricatives /x ɣ/ are only found in loanwords from Arabic, English, Persian, Urdu (Dulai 1989, Bhatia 1993, Bukhari 2008, Bhardwaj 2016), and not all speakers maintain all contrasts. /h/ can occur word-initially but not word-medially and finally. Fricatives /s ʃ h/, found in the native lexicon, are illustrated in word-initial position in Figure 4.



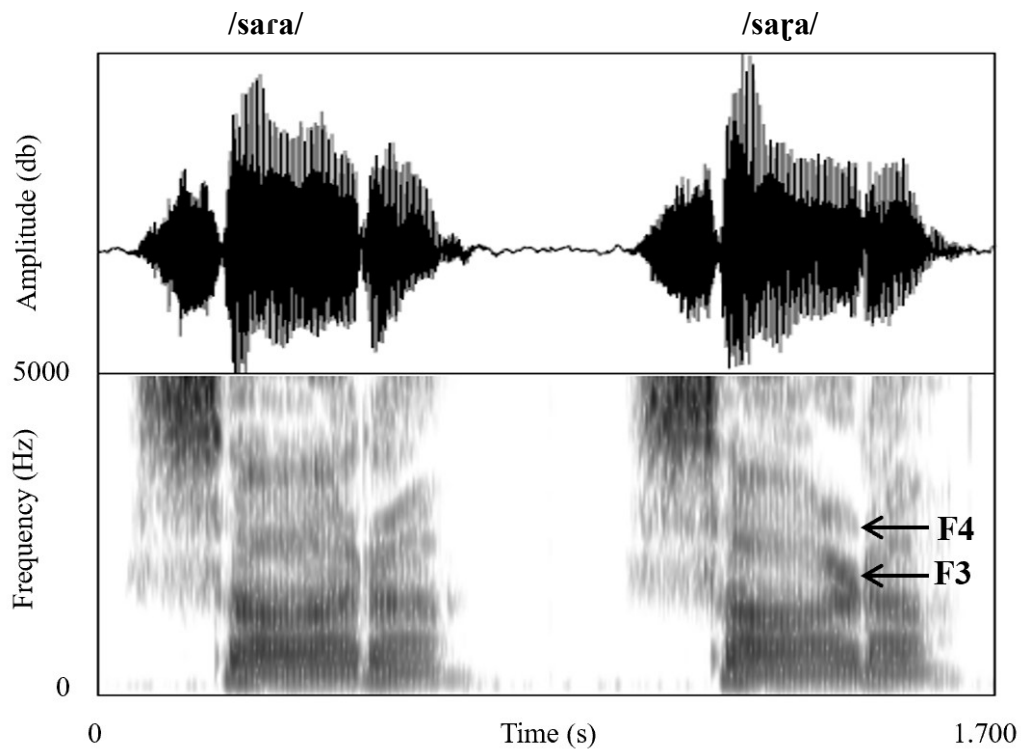
**Figure 4** Waveforms and spectrograms illustrating word-initial fricative contrasts. Left-to-right: /sal/ سال ‘year’, /jal/ شال ‘shawl’ and /hal/ حال ‘condition’.

## Nasals

Lyallpuri Punjabi contrasts nasals at three places of articulation: labial /m/, dental /n/ and retroflex /ɳ/. Labial and dental nasals can occur in all word positions, whereas retroflex /ɳ/ only occurs word-medially and finally. Palatal and velar nasals occur as allophones of /n/ and are found in homorganic clusters with palatal and velar stops (details in Consonant phonotactics).

## Approximants

There is a four-way liquid contrast in Lyallpuri Punjabi: /ɾ/ – /l/ – /ɽ/ – /ʎ/. Rhotics are prototypically realized as taps in the speech of our informant. /ɾ/ and /l/ can occur in all word positions, but the retroflex tap /ɽ/ and lateral /ʎ/ contrast with alveolar /ɾ/ and /l/ only word-medially and word-finally. Figure 5 illustrates the contrast between alveolar /ɾ/ and retroflex /ɽ/ taps. **The retroflex tap /ɽ/ is characterized by earlier lowering of third and fourth formants into a shorter, less attenuated interval of occlusion.** Labial /ʋ/ and palatal /j/ approximants are contrastive word-initially and medially, but not medially.



**Figure 5** Waveforms and spectrograms illustrating word-medial rhotic contrasts: /sara/ سارا ‘a female name’ (left) and /saɽa/ ساڙا ‘jealousy’ (right).

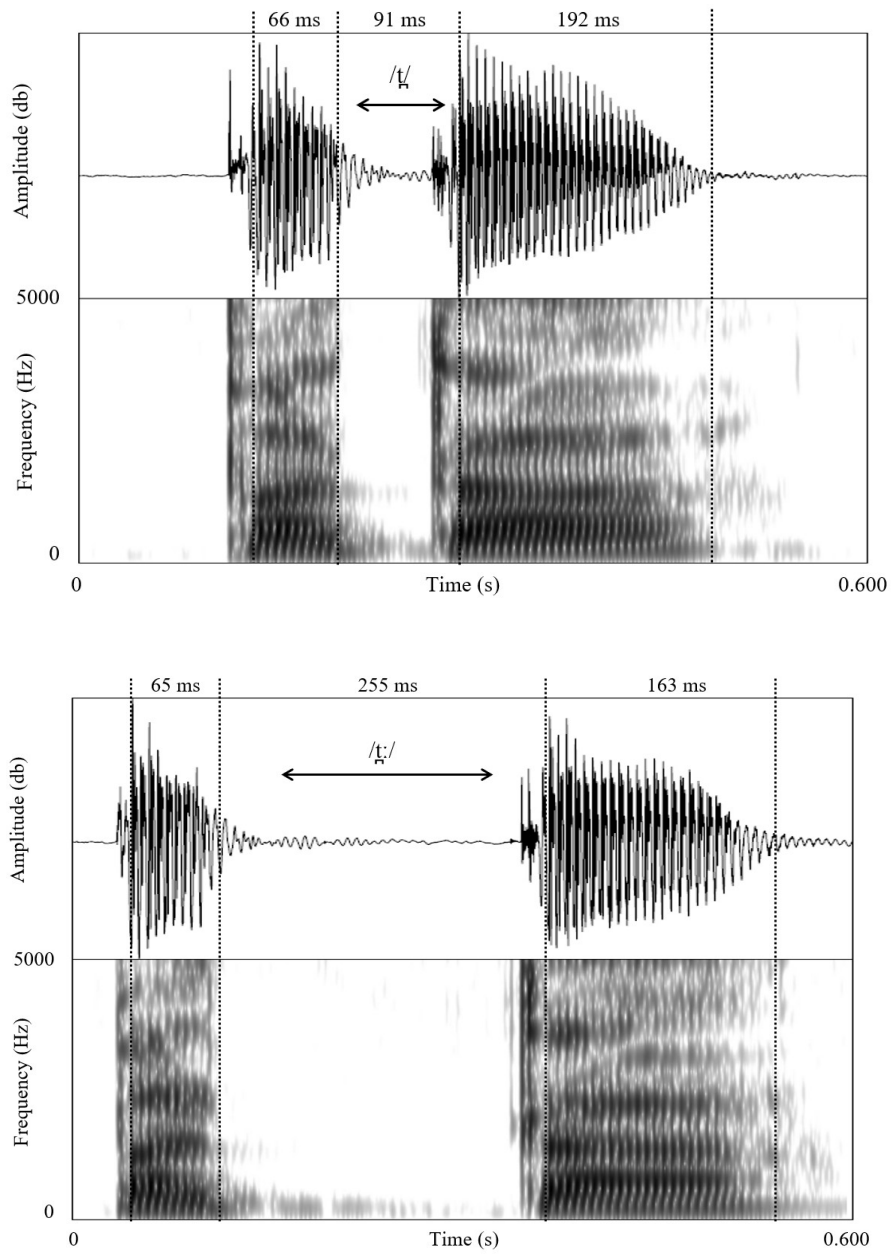
## Geminates

	Singleton			Geminate		
p	/təpa/	ٹپا	jump	/təp:a/	ٹپا	traditional song
p <sup>h</sup>	/dʒap <sup>h</sup> i/	جاپھی	Kabaddi player <sup>1</sup>	/dʒəp <sup>h</sup> :i/	جپھی	hug
b	/ləba/	لپا	find	/ləb:a/	لپا	found
t	/pət̪a/	پتا	address	/pət̪:a/	پتا	leaf
t <sup>h</sup>	/hat̪ <sup>h</sup> :i/	ہاتھی	elephant	/hat̪ <sup>h</sup> :i/	ہتھی	hammer handle
ɖ	/səɖi/	صدی	century	/səɖ:i/	صدی	called (fem.)
t	/kət̪a/	کتا	cut	/kət̪:a/	کتا	buffalo's calf
t <sup>h</sup>	/kat̪ <sup>h</sup> :a/	کاتھا	Indian jujube <sup>2</sup>	/kat̪ <sup>h</sup> :a/	کتھا	together
ɖ	/vəɖa/	وڌا	harvest	/vəɖ:a/	وڌا	big
k	/tʃəka/	چکا	carry	/tʃək:a/	چکا	bicycle rim
k <sup>h</sup>	/pək <sup>h</sup> a/	پکھا	ignite fire	/pək <sup>h</sup> :a/	پکھا	fan
g	/dʒəga/	جگہ	place	/dʒəg:a/	جگا	a nick name
tʃ	/bətʃa/	بچا	save	/bətʃ:a/	بچہ	child
tʃ <sup>h</sup>	/bətʃ <sup>h</sup> a/	بچھا	spread	/bətʃ <sup>h</sup> :a/	بچھا	cow's calf
dʒ	/səɖʒa/	سڄا	decorate	/səɖʒ:a/	سڄا	right
s	/kəs̪a/	کسا	rub	/kəs̪:a/	کسا	jerk (n.)
m	/kəmi/	کمی	shortage	/kəm:i/	کمی	low caste
n	/gəna/	گنا	count	/gən:a/	گنا	sugarcane
l	/kəli/	کلی	paint	/kəl:i/	کلی	alone (fem.)

Nineteen consonants of Lyallpuri Punjabi have contrastive geminate forms: /p p<sup>h</sup> b t̪ t̪<sup>h</sup> ɖ t̪ t̪<sup>h</sup> d̪ k k<sup>h</sup> tʃ tʃ<sup>h</sup> dʒ s m n l/. Geminate consonants are always preceded by central vowels (/ɪ ə ʊ/). Geminate plosives are characterized by longer closure duration compared to singletons; duration varies with place of articulation, but overall, mean total duration of geminate plosives is approximately 40% greater than singleton equivalents (Hussain 2015). Contrastive singleton and geminate plosives are illustrated in word-medial contexts in Figure 6.

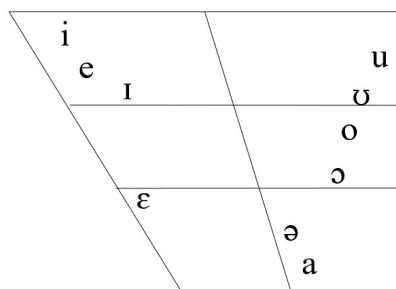
<sup>1</sup> Kabaddi is a popular sport in rural areas of Punjab, India and Pakistan. /dʒap<sup>h</sup>i/ is a type of player in Kabaddi.

<sup>2</sup> /kat̪<sup>h</sup>:a/ refers to a type of Indian jujube fruit (red date).



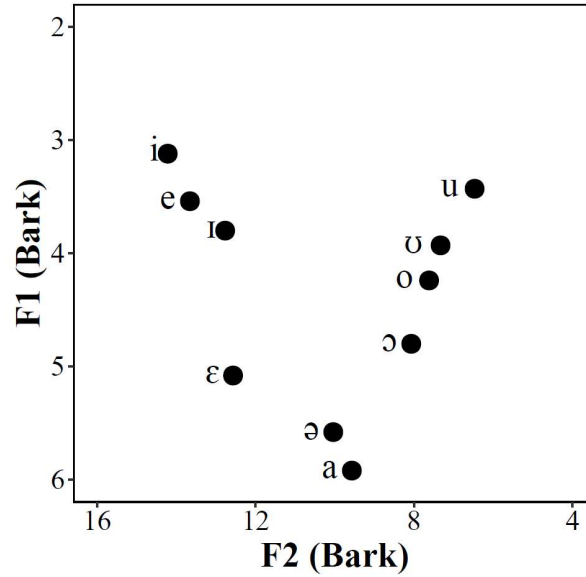
**Figure 6** Waveforms and spectrograms of voiceless unaspirated singleton /t/ in /pəʔtɑ/ پتأ ‘address’ (top) and voiceless unaspirated geminate /tː/ in /pəʔtːɑ/ پتأ ‘leaf’ (bottom).

## Vowels



	Initial			Medial			Final		
i	iɖ	عید	Muslim festival	pir	پیر	Monday	si	سی	sew
I	ɪk	اک	one	p <sup>h</sup> ɪr	پھر	retract	-	-	-
e	eɖa	ایدا	his	ber	بیر	berry	se	سے	porcupine
ε	εf	عیش	luxury	pεr	پیر	foot	sε	سہ	tolerate
a	as	آس	hope	par	پار	cross	sa	سا	breath
ə	əsi	آسی	we	pər	پر	feather	-	-	-
o	os	اوس	dew drops	ʃor	چور	thief	bo	بو	smell
ɔ	ɔk <sup>h</sup> a	اوکھا	difficult	ʃɔl	چول	rice	bɔ	بو	sit
ʊ	ʊɖas	اُداس	sad	pʊr	پُر	town	-	-	-
u	uŋa	اُونا	low	pur	پور	fill	su	سُو	calved

Lyallpuri Punjabi contrasts ten oral vowels in closed syllables. Oral vowels can be categorized as central /ɪ ə ʊ/, and peripheral /i e ε a o ɔ u/. Peripheral vowels are typically longer than central vowels, and only peripheral vowels occur in all word-positions. Peripheral vowels may be analyzed as bimoraic, and central vowels as monomoraic (see section on Syllable structure). Figure 7 illustrates the distribution of word-medial vowels according to mean first and second formant frequencies (Table 1).



**Figure 7** Acoustic distribution of word-medial oral vowels. Mean values (Bark) of first (vertical axis) and second (horizontal axis) formants at vowel midpoints. Average of five tokens, elicited using words in center column of vowel contrasts table.

**Table 1** Mean first and second formant frequencies for Punjabi vowels produced in word-medial position, in Hz and Bark.

Vowel	F1 (Hz)	F2 (Hz)	F1 (Bark)	F2 (Bark)
/i/	309	2397	3.12	14.22
/ɪ/	378	1930	3.80	12.77
/e/	351	2203	3.54	13.66
/ɛ/	519	1872	5.08	12.57
/a/	621	1184	5.92	9.57
/ə/	579	1276	5.58	10.04
/o/	424	856	4.24	7.62
/ɔ/	486	926	4.80	8.07
/ʊ/	391	813	3.93	7.33
/u/	340	692	3.43	6.47

In addition to oral vowels, Lyallpuri Punjabi has a contrastive set of nasal vowels. All seven peripheral oral vowels contrast with their nasal counterparts (Bhatia 1993, Shackle 2003), but central vowels do not show nasal vs. oral opposition. Oral/nasal vowel contrasts are illustrated in (1) (Shackle 2003).

(1) Oral vs. nasal vowels in Lyallpuri Punjabi:

Oral			Nasal		
/p <sup>h</sup> əɾi/	پھڑی	grasped	/p <sup>h</sup> əɾĩ/	پھڑیں	to grasp (hort.)
/ʃupe/	چوپیے	sucked	/ʃupẽ/	چوپییں	to suck (hort.)
/hɛ/	ہے	is	/hẽ/	ہیں	what?
/ga/	گا	sing	/gã/	گان	cow
/ʃo/	چو	milking	/ʃõ/	چوں	from
/sɔ/	سو	hundred	/sõ/	سون	sleep
/kəru/	کرؤ	he will do	/kərũ/	کرؤں	I shall do

## Diphthongs

Lyallpuri Punjabi uses thirteen contrastive oral diphthongs. /ɛ ɔ/ do not occur as a first or second member of any diphthongs, and central vowels /ɪ ə ʊ/ do not occur as a second member of any diphthongs. /ɪ ʊ/ also have constraints as a first member of the diphthongs. There are no diphthongs with nasal vowels either as a first or a second member. Monosyllabic words contrasted by diphthongs are illustrated in (2).

(2) Lyallpuri Punjabi diphthongs:

/sui/	سوئی	small needle	/sue/	سوئے	big needle
/soi/	سوئی	slept (3 <sup>rd</sup> fem. sin.)	/lau/	لاؤ	will remove
/gəi/	گئی	went (3 <sup>rd</sup> fem. sin.)	/ləu/	لؤ	will take
/mai/	مائی	old lady	/k <sup>h</sup> ou/	کھوؤ	will snatch
/soe/	سوئے	slept (3 <sup>rd</sup> pl.)	/ʈoa/	ٹوا	pit hole
/pae/	پائے	wore (3 <sup>rd</sup> pl.)	/dʒua/	جوا	gambling
/dʒao/	جاؤ	Go (imp.)	-	-	-

## Prosodic features

### Syllable structure

In Lyallpuri Punjabi, syllables consist maximally of one onset consonant and two coda consonants (C)V(V)(C)(C). The vast majority of words are monosyllabic or disyllabic. Peripheral vowels are bimoraic, and the central vowels are monomoraic. There is a word minimality constraint where lexical items must contain at least two moras of structure (i.e., they are a foot). Representative examples of possible syllable types are presented in (3).

(3) Lyallpuri Punjabi syllable types:

V	/a/	آ	Come! (imp.)
VC	/am/	عام	common
CV	/k <sup>h</sup> a/	کھا	Eat! (imp.)
CVC	/dʒəl/	جَل	burnt
VCC	/əmb/	آمب	mango
CVCC	/məst̪/	مَسْت	mentally ill

### Consonant phonotactics

Word-initial clusters are not found in the native Punjabi lexicon. Words with final consonant clusters are rare, but can be found in Arabic, English, Persian, and Urdu loanwords, with the structures illustrated in (4a-b). The realization of final consonant clusters depends on speech rate, speaker literacy and bilingualism (Gill & Gleason 1962).

(4) Word-final clusters:

(a) Fricative + plosive

/sʊst̪/	سُست	lazy
/gəʃt̪/	گُشت	wander around

(b) Rhotic + plosive

/mærd/	مرد	man
/mɪrtʃ/	مرچ	pepper

Plosives can occur as the first or second member of heterorganic word-medial consonant sequences. If the first consonant is a plosive, the second consonant can be a plosive, liquid or nasal.

Word-medial plosive (voiced) + plosive (voiced) sequences occur across morpheme boundaries (5a). In heterorganic nasal + plosive sequences, the plosive is always voiceless in roots (5d), but at morpheme boundaries nasal + voiced plosive sequences are permitted (/ʃʊm.də/ ‘kiss + present singular masculine marker’). Heterorganic word-medial consonant sequences are exemplified in (5a-e).<sup>3</sup>

(5) Heterorganic word-medial consonant sequences:

(a) Plosive + plosive

/ləb.d̪i/	لَبْدِي	search (fem.)
/bətʃ.d̪a/	بَتْجَا	escape

(b) Plosive + liquid

/nok.ri/	نوکری	job
/ʃhət̪.ri/	چَهْتَرِي	umbrella

(c) Plosive + nasal

/ʃʊk.n̪a/	چُکْنَا	carry
/bəd̪.nam/	بَدْنَام	notorious

(d) Nasal + plosive

/ʃim.t̪a/	چِمٹَا	tong
/ʃəm.t̪fa/	چَمچَا	spoon

(e) Fricative + plosive

/ʃəs.ka/	چَسْکَا	addicted
/kəʃ.t̪i/	کَشْتِي	boat

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<sup>3</sup> See Arun (1961), Gill & Gleason (1962), and Malik (1995) for further discussion of consonant phonotactics.

Homorganic word-medial consonant sequences are also permitted in Lyallpuri Punjabi, most commonly nasals + plosives, illustrated in (6):

(6) Homorganic word-medial consonant sequences:

Nasal + plosive

/gən.ɖa/	گندا	dirty
/gəŋ.ɖa/	گنڈا	onion
/məŋ.ɖʒa/	منجا	cot
/kəŋ.ga/	کنگا	comb
/k <sup>h</sup> əm.ba/	کھمبا	pole

### Stress and tone

Stress is not contrastive in Lyallpuri Punjabi. All words have at least one stressed syllable. Stress assignment is sensitive to syllable weight, which is determined by the length of the nucleus (central vowels are short; peripheral vowels are long) and the structure of the rime. Three categories of syllable weight are necessary to account for the distribution of stress: light (monomoraic: (C)V, e.g., /pə.ɖʒa/ پچا ‘fifty’),<sup>4</sup> heavy (bimoraic: (C)V, e.g., /ɖʒa/ جا ‘Go! (imp.)’), and superheavy (trimoraic: (C)VC, e.g., /mas/ ماس ‘skin’; or (C)VCC, e.g., /ʃərs/ چرس ‘weed’). In disyllabic words, the leftmost superheavy syllable is stressed (7a). If there is no superheavy syllable, then the penultimate syllable is stressed. In trisyllabic words (7b), stress is always placed on the penultimate or antepenultimate syllable, but not on the final syllable.<sup>5</sup>

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<sup>4</sup> The first syllable /pə/ is a light (CV) syllable.

<sup>5</sup> See Dhillon (2010) for detailed analysis of Punjabi prosodic structure and tonal alignment.

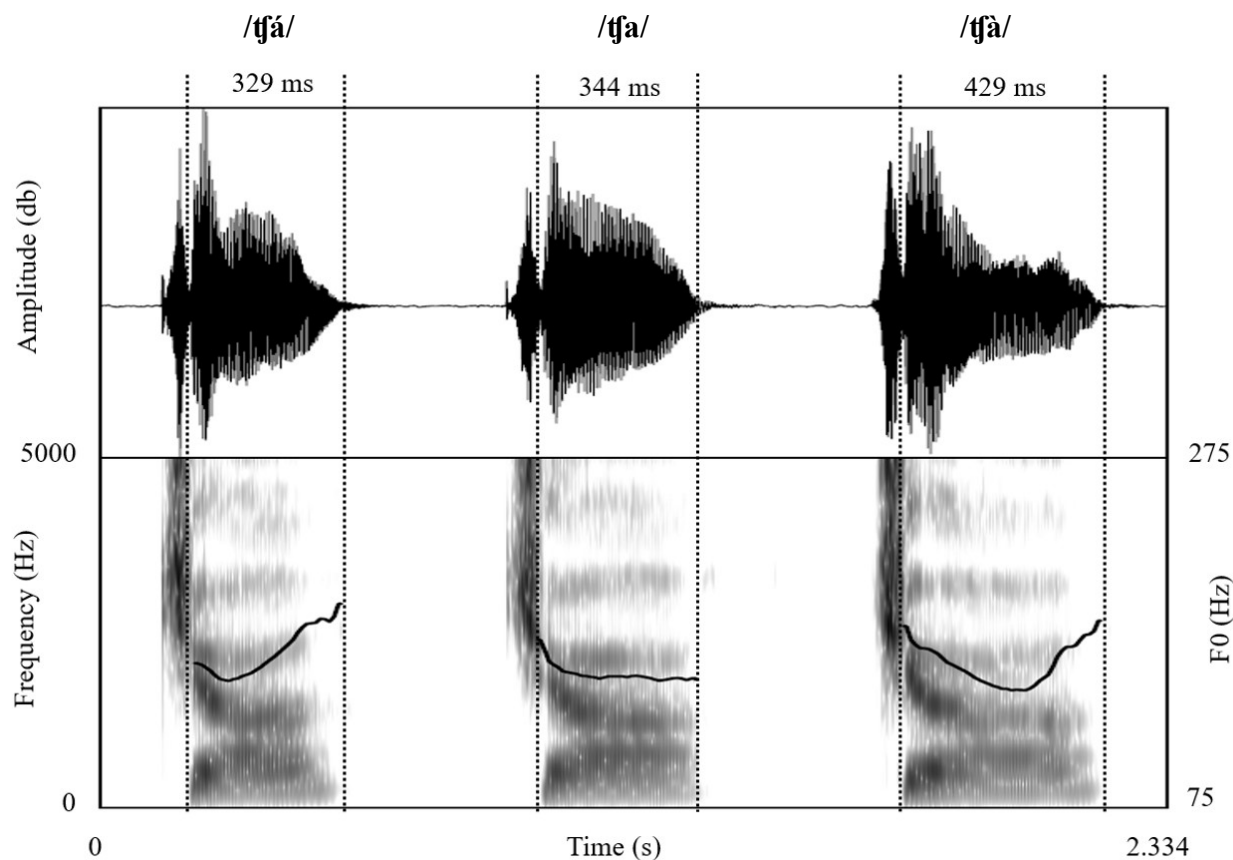
(7) Patterns of stress assignment, illustrated on disyllabic and trisyllabic words with differing syllable weights: light (L: short-central vowel, no coda), heavy (H: long-peripheral vowel only, or short-central vowel + coda), and super-heavy (S: long-peripheral vowel + coda):

(a) Disyllabic				(b) Trisyllabic			
'LH	/'tʃʰʊ.ri/	چھری	knife	'LLH	/'tʃʰʊ.tʃi.jã/	چھٹیاں	holidays (pl.)
'HH	/'dʒa.la/	جالا	cobweb	'HLH	/'pa.tʃi.jã/	پاٹیاں	torn (pl.)
'SH	/'mal.tʃa/	مالٹا	orange	'HHS	/'kʰa.ne.ʋal/	خانپوال	city name
'SS	/'mal.d̪ar/	مالدار	wealthy	H'HH	/bəɖ.'ma.f̪i/	بدماشی	rascality
L'S	/tʃə.'lak/	طلاق	divorce	L'HH	/pə.'pi.tʃa/	پپیتا	papaya
H'S	/məz.'buɖ/	مضبوط	strong	L'SH	/bə.'gaɽ.na/	بگاڑنا	mess up
-	-	-	-	'SHH	/'kar.kʰa.na/	کارخانہ	workshop
-	-	-	-	'SLH	/'ban.də.rã/	باندران	monkeys (pl.)

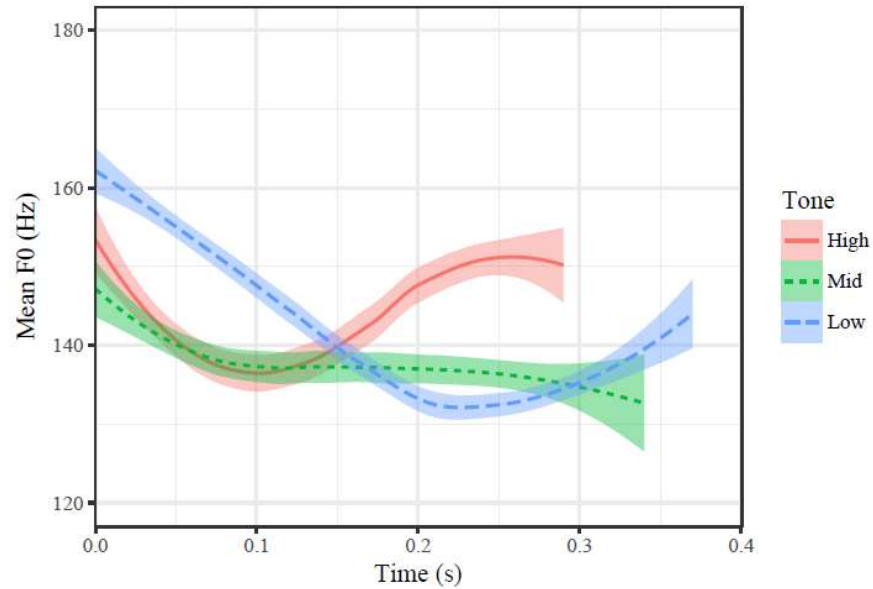
A notable feature of Lyallpuri Punjabi, as in other dialects, is the development of three contrastive tones: high (´), mid (not generally marked) and low (˘) (Bahl 1957, 1969, Gill 1960, Baart 2014). Tones always align with the stressed syllable (Bailey 1914, Dhillon 2010), and can occur on both open and closed syllables. Tonal syllables are always stressed, but not vice versa. Monosyllabic and disyllabic words contrasting only in tones are illustrated in (8). Pitch tracks characterizing the three tones are presented in Figure 8.

(8) Three-way tonal contrast in Lyallpuri Punjabi:

	Monosyllabic			Disyllabic		
High	/tʃʰa/	چا	tea	/kəɽi/	کڑی	curry
Mid	/tʃa/	چاہ	enthusiasm	/kəɽi/	کڑی	a small bangle
Low	/tʃà/	چا	peek	/kəɽi/	گھڑی	watch



**Figure 8** Waveforms and spectrograms of /tʃá/ چا ‘tea’ (left), /tʃa/ چا ‘enthusiasm’ (middle) and /tʃà/ چا ‘peek’ (right), bearing high, mid, and low tones, respectively. F0 has been superimposed on each spectrogram (solid line) to illustrate pitch trajectories for each tone (left y-axis: frequency range of spectrogram; right y-axis: F0 range).



**Figure 9** Mean pitch trajectories of high (/tʃá/ [tʃa425] چا ‘tea’), mid (/tʃa/ [tʃa32] چا ‘enthusiasm’), and low (/tʃà/ [tʃa513] چا ‘peek’) tones (average of five repetitions of each word). F0 was calculated at 10 ms intervals throughout each vowel /a/. Ribbons around mean pitch tracks indicate 95% confidence intervals.

Mid tone is the default tone and occurs on vowels where there is no tone specification at the phonetic level (Bhatia 1975). In the high tone, pitch is raised at the end of the vowel (Figure 9). Low tone generally has a falling-rising contour (Campbell 1981), but typically achieves a lower F0 target than the other two tones. The three tones are also characterized by temporal differences (Gill 1960): low tones have the longest duration, and high tones the shortest (Figure 9).

## Transcription of The North Wind and The Sun

This passage was translated from English to Lyallpuri Punjabi. Only high (´) and low (`) tones are marked.

### Phonemic transcription

ʃʊmal ɖi hæva ʔe surəɖz vɪʃ rəpʰ:ət peja si pəi kon bóʔa ʔakəʔvər e  
ʔe fer ik mʊsafər aja jinē kəmbəl ɖi bʊk:əl mari hoi si  
onā ne ʃəɾʔ la ləi pəi ɖʒérə pélā mʊsafər ɖa kəmbəl lʊva ɖeve o bóʔa ʔakəʔvər hove ga  
fer ʃʊmal ɖi hæva pura zor la ke ʃəl:i  
pər o ɖʒɪn:a zor la ke ʃəlɖi si mʊsafər əpna kəmbəl onā i kəs ke bʊk:əl mar lēɖa si  
axər ʃʊmal ɖi hæva ne har ke bəs kiʔi  
fer surəɖz gərmi nal ʃəmkeya ʔe mʊsafər ne ʃʰeʔi nal əpna kəmbəl lá ɖɪʔ:a  
ʔe ɛɖz ʃʊmal ɖi hæva nū mənəna peja pəi ɖonā vɪʃ:õ surəɖz bóʔa ʔakəʔvər e

### Orthographic version (Shahmukhi script)

The following translation of the passage is written in Shahmukhi script. It should be noted that voiced aspirates and word-medial and word-final /h/ that have been lost in the speech of Lyallpuri Punjabi speakers, are still written in the Shahmukhi script.

شمال دی ہوا تے سورج وچ رپھڑ پیا سی پئی کون بوبتا طاقتور اے۔ تے فیر اک مسافر آیا جینیں گمبل دی بگل ماری ہوئی سی۔ اوناں نے شرط لائی پئی جیہڑا پہلاں مسافر دا گمبل لُوا دیوے او بوبتا طاقتور ہووے گا۔ فیر شمال دی ہوا پورا زور لا کے چلی، پر او جتاں زور لا کے چلدی سی مسافر اپنا گمبل اوناں ای گس کے بگل مار لیندا سی۔ آخر شمال دی ہوا نے ہار کے بس کیتی۔ فیر سورج گرمی نال چمکیا تے مسافر نے چھیتی نال اپنا گمبل لا دتا۔ تے اینج شمال دی ہوا نوں مننا پیا پئی دونوں وچوں سورج بوبتا طاقتور اے۔

## Abbreviations

n.	Noun
pl.	Plural
fem.	Feminine
hort.	Hortative
3 <sup>rd</sup> pl.	3 <sup>rd</sup> person plural
3 <sup>rd</sup> fem. sing.	3 <sup>rd</sup> person feminine singular
imp.	Imperative
s.d.	standard deviation

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