

MANKIYALI PHONOLOGY: DESCRIPTION AND ANALYSIS

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This thesis provides a detailed description and analysis of the Mankiyali phonology, a hitherto undocumented and endangered language of northern Pakistan. The language is spoken by about 500 people in a remote mountainous area in the Mansehra district of Khyber Pakhtunkhwa Province, Pakistan. The data contained herein is a result of first-hand fieldwork with native Mankiyali speakers between 2019 and 2021. Data collection methods include recordings of naturally occurring discourse (e.g., stories, poems, conversations) and elicitation sessions with native speaker consultants. Topics covered in the thesis include an account of Mankiyali's phonemic inventory, phonotactics, a description of some phonological processes, minimal word constraints, and word stress placement.

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CHAPTER 1

INTRODUCTION

As many linguists predict that half of the world's approximately 7,000 remaining languages will die out by the end of the century, the documentation, description, and development of a well-organized record of the world's most vulnerable languages has become increasingly urgent (McDonnell, Berez-Kroeker, & Holton 2018). Hidden within each undocumented language we find an abundance of cultural, historical, and scientific information that remains unknown to the outside world. Moreover, every language contains forms and peculiarities unique to that language alone, so when a language ceases to exist, the global linguistic community suffers in that we lose a portion of evidence that contributes to the exhaustive explanation of how real languages function. Dr. Keren Rice affirms this sentiment, saying that “languages continue to take us by surprise in the previously unobserved properties that they reveal and in how they combine familiar properties in an unfamiliar way” (Rice 2006).

Therefore, an effective linguistic description of a language achieves one of two things for formal linguistic theory. First, it can act as a buttress, reinforcing and supporting accurate theoretical approaches to language by providing empirical evidence to back a linguist's claims about how languages function. On the other hand, it can be used as a battering ram, smashing into the ramparts of a baseless theory until it is too weak to stand. For this reason, linguistic descriptions should not only be welcomed by the theoretical linguist, but they should be advocated for and commended. The more accurate accounts of the world's languages we possess, the more precisely we can shape our theories to describe the underlying principles of language in general.

As such, this thesis accomplishes two things. First, it enriches the empirical linguistic

evidence available to us by providing a structural description of the phonological features of Mankiyali, a hitherto undocumented language of Northern Pakistan. Second, it aims to take some initial steps toward the preservation and revitalization of the language.

1.1 Background on Mankiyali

At least 30 distinct indigenous languages currently exist in the mountainous region of Northern Pakistan (Liljegren 2018). Grierson's (1903) linguistic survey of the Indian subcontinent includes references to several languages in Northern Pakistan and thus marks the initiation of linguistic research in the region, but Bashir may have been the first modern linguist to focus on a specific language, publishing a sketch of Kalasha syntax (Bashir 1988). Other works soon followed, as foreign linguists began to take an interest in these remote Pakistani languages. Recently, linguists and native speakers have begun collaborating to produce a number of descriptions for these previously unknown, undocumented and/or poorly documented languages (Baart 1997, 1999; Radloff 1999; Trail & Cooper 1999; Koul 2003; Zoller 2005; Schmidt & Kohistani 2008; Lunsford 2011; Raja, Rashaid & Sohail 2011; Liljegren 2016; Perder 2013; Munshi 2018; Akhunzada 2019). Nevertheless, many of these remotely spoken languages are either completely undocumented or severely under-documented and are at risk of being overrun by the more dominant languages of the area such as Urdu, Hindko, Panjabi, and others.

Speakers of the endangered Mankiyali language reside primarily in the remote mountaintop villages of Danna and Dameka, near the city of Oghi in the Mansehra District of Khyber Pakhtunkhwa (see [Appendix B](#) for maps of where Mankiyali is spoken). A handful of speakers also live in urban centers around Pakistan such as Islamabad. The language may have originally bore the name Tarawari, but due to the stigmatization of the Tarawara people, the speakers disowned the name and assumed the new name of Mankiyali (Anjum & Rehman 2015).

Mankiyali is an unwritten language, and literacy in any language among speakers is very low. However, some Mankiyali speakers do have university degrees. The predominant occupations for Mankiyali speakers are agriculture and unskilled labor. Those with university degrees are teachers in the surrounding region. Educational opportunities for women are highly limited, with the closest girls' school a 45-minute drive away. As a result, no female speakers of Mankiyali have higher than an eighth-grade education, and no women work outside of the home. Almost all native Mankiyali speakers are also fluent in Hindko, the dominant language of the area, and many speakers are fluent in other areal languages, like Panjabi, Urdu, and Pashto, as well. Due to an increase in marriages between Mankiyali-speaking men and women from other communities that do not speak Mankiyali, many children with non-Mankiyali speaking mothers are growing up without learning Mankiyali as their first language. Consequently, the language is slowly decreasing in usage. The language is unwritten, only used orally in settings where all people are Mankiyali speakers, and is highly limited in its domains. For these reasons, the documentation and description of the language has become increasingly urgent. At present no literature exists on Mankiyali except for a brief sociolinguistic examination (Anjum & Rehman 2015) and a short illustration of the IPA sounds used in the language (Munshi & Englert in press).

1.2 Methodology

The primary methods used to obtain data for this thesis were recording and transcription of naturally occurring discourse and elicitation sessions. Genres for the naturally occurring discourse include conversations, narratives, poetry, descriptions of recipes, and stories. All elicitation sessions were conducted in a controlled environment, either by me, by a native speaker trained in data collection, or by other researchers of the Mankiyali language

documentation team at the University of North Texas. I reviewed and confirmed all transcriptions that were collected by other participants with the help of native speakers. I assume responsibility for all errors in the data presented in this thesis.

Three native speakers of Mankiyali – Aurang Zeb, Gohar-Ur Rehman, and Muhammad Suleman – acted as the primary sources of language data, though several other speakers of differing age, sex, and occupation also participated to lesser and varying degrees. These speakers include Abdul Haq, Abdul Qayum, Ahmad Adnan, Ghulam Sarwar, Khadija Bibi, Khatun Bibi, Muhammad Rafique, Muhammad Aslam, Muhammad Awaiz, Muhammad Ibrahim, Muhammad Younas, Naik Muhammad, Nargis Bibi, Sartaj Bibi, and Sosan Jaan. All data presented in this thesis was transcribed and translated with the help of native speakers and was confirmed, in many cases several times, with the help of one or more native speaker.

A large number of the naturally occurring discourses and elicitations that were collected for the (ongoing) documentation project are part of the *Mankiyali Language Resource* – a digital collection of linguistic materials housed at the UNT Digital Library. The collection is part of The Computational Resource for South Asian Languages (CoRSAL) -- a digital archive for the preserves and maintains linguistic data items on under-resourced languages of South Asia (CoRSAL 2020).

1.3 Transcription Key

The following list outlines the transcription symbols used in this thesis that diverge from standard IPA notations. The choice to use this system of transcription stems from a desire for this descriptive analysis to coincide with the systems utilized in the majority of South Asian grammatical descriptions (Masica 1993:xv; Liljegren 2016:39). For a complete breakdown of the transcription key used in this work along with IPA equivalents, see [Appendix A](#).

- Retroflex consonants are distinguished from other places of articulation with the placement of a dot under the consonant: ʈ, ʈʰ, ɖ, ɖ, and ɽ.
- A hachek is used to indicate post-alveolar affricates and fricatives: č, ǰ, čʰ, š, and ž.
- The voiceless alveolar affricate is indicated with the following symbol: c.
- Vowel length is signified with double vowels rather than a macron or triangular colon: aa, ũũ, etc.

1.4 Organization of Thesis

The organization of this thesis is as follows. The first chapter introduces the Mankiyali language and the purpose of this work. Chapters 2-5 outline a linguistic description of Mankiyali's word-level phonology. Chapter 2 provides a detailed classification of Mankiyali's phonemic inventory, including the consonantal and vocalic inventories as well as an introduction to contrastive lexical tone. Chapter 3 presents the phonotactic constraints of the language. A brief look at several phonological processes is presented in chapter 4, and a description of two prosodic phenomena – minimal word constraints and word stress placement – is provided in chapter 5. The thesis concludes with closing remarks and notes for future research.

CHAPTER 2

PHONEMIC INVENTORY

This account of the Mankiyali phonological system represents the first detailed classification of the language's phonemes. In addition to my original research and analysis, this section is bolstered by Munshi & Englert (in press), which provides an initial illustration of the Mankiyali phonemic inventory.

2.1 Consonants

2.1.1 Consonantal Inventory

There are 31 phonemically distinct consonant segments in Mankiyali. Table 1 presents these consonants based on distinctions in both place and manner (i.e., voicing and aspiration) of articulation. Mankiyali's phonological system is remarkably similar to the (Hazara) Hindko and (Lahore) Panjabi systems as set forth in Bashir & Connors (2019), two languages whose geographic domains are contiguous with that of Mankiyali. Not only do the three languages lack voiced aspirates (breathy-voiced consonants), but, together, the Hindko and Panjabi sound systems also contain 30 of the 31 consonantal phonemes found in the Mankiyali phonemic inventory (Bashir & Connors 2019) 2019:22-23).¹ The only consonant present in Mankiyali, but not in Hindko or Panjabi, is the voiceless alveolar affricate, /c/.

The labio-dental fricative, [f], is present in Mankiyali but likely originates from Persio-Arabic and English loans. Most often, the underlying /f/ is nativized in Mankiyali as /p^h/, similar to other Indo-Aryan languages like Panjabi, Saraiki, Gujarati, and Kashmiri (Cardona & Jain,

¹ Bashir & Connors indicate a few phonemic features characteristic of Hindko and Panjabi phonemes that vary slightly from the Mankiyali inventory presented here. For instance, the fricatives /s/, /z/, /n/, and /r/ are categorized as dentals in Hindko and Panjabi, but they are classified as alveolar here. Additionally, the retroflex nasal /ŋ/ in Mankiyali is transcribed with a nasalized retroflex rhotic /ɽ̃/ in Hindko (e.g. hno. *dex̣̃aa* 'to see, look at' vs. nlm. *palana* 'to see'). However, as Masica (1993:95) points out, /ŋ/ is often perceived phonetically as /ɽ̃/, so this may explain the difference in transcription.

2007:589, 665, 902; Bashir & Conners, 2019:21). For most speakers, [f] exists in free variation with [p^h] (e.g. *p^hul/ful* ‘flower’ and *p^hal/fal* ‘fruit’). However, a small number of words occur in which [f] is the only acceptable pronunciation (e.g. *guuf* ‘hip bone’ and *farza* ‘tomorrow’). [p^h] has not been found word-finally. For the remainder of this thesis, [f] and [p^h] will not be distinguished and will be transcribed as /p^h/.

Table 1: Consonantal Inventory

	Bilabial	Labio-dental	Dental	Alveolar	Post Alveolar	Retroflex	Palatal	Velar	Glottal
Plosive	p b p ^h		t d t ^h			ʈ ɖ ʈ ^h		k g k ^h	
Nasal	m			n		ɳ			
Flap				r		ɽ			
Affricate				c	č ĵ č ^h				
Fricative				s z	š ž			x ɣ	ɦ
Approx.		v					y		
Lat. Approx.				l					

2.1.2 Consonantal Distribution and Variation

What follows is detailed description of the distribution of phonemes found in Mankiyali. Whenever possible, minimal pairs are provided to elucidate the contrastive distribution of specific phonemes. Where no minimal pair has been identified, I introduce near minimal pairs to demonstrate phonemic distinctions.

Table 2 provides examples of the distribution of each consonant word-initially, word-medially, and word-finally. A gap in the table indicates that no instance of the phoneme in question has been found to occur in that particular position in a word. For example, the retroflex rhotic, /ɽ/, has not appeared word-initially in the data collected thus far, so the corresponding cell

is left empty. Notice that every phoneme appears in the medial position. Of the five retroflex consonants, /ŋ/ and /ɽ/ do not appear in the word-initial position, but all other consonants can be found word-initially. The preclusion of /ŋ/ and /ɽ/ from word-initial position also takes place in Panjabi (Bashir & Conners 2019:57). Also, /fi/ is the only consonant not found in word-final position.

Table 2: Distribution of Consonants

	Word-Initial	Word-Medial	Word-Final
p	<i>pata</i> ‘after’	<i>k^hoopa</i> ‘coconut’	<i>saap</i> ‘snake’
b	<i>buuṭa</i> ‘tree’	<i>amblook</i> ‘Japanese fruit’	<i>drab</i> ‘thump’
t	<i>tu</i> ‘you’	<i>ratiir</i> ‘red’	<i>mat</i> ‘above’
d	<i>du</i> ‘two’	<i>kooryandal</i> ‘asparagus’	<i>saad</i> ‘simple’
ṭ	<i>ṭuka</i> ‘fabric’	<i>aṭa</i> ‘egg’	<i>baaṭ</i> ‘stone’
ḍ	<i>ḍaḍ</i> ‘frog’	<i>sraḍoṇi</i> ‘dry grass (GEN.PL)’	<i>piḍ</i> ‘food’
k	<i>ko</i> ‘who’	<i>dokandaara</i> ‘shopkeepers’	<i>ḍak</i> ‘stop (IMP)’
g	<i>gṇd</i> ‘ball’	<i>ṣiṅga</i> ‘horn’	<i>piṅg</i> ‘swing’
p ^h	<i>p^hal</i> ‘fruit’	<i>p^hup^hra</i> ‘father’s sister’s husband’	<i>guup^h</i> ‘hip bone’
t ^h	<i>t^hila</i> ‘big’	<i>kat^hi</i> ‘she drops (liquids)’	<i>kat^h</i> ‘drop (IMP) (liquids)’
ṭ ^h	<i>ṭ^hok</i> ‘hammer (IMP)’	<i>aṅṭ^ha</i> ‘thumb’	<i>ūūṭ^h</i> ‘camel’
k ^h	<i>k^ha</i> ‘eat (IMP)’	<i>k^hak^haar</i> ‘watermelon’	<i>dak^h</i> ‘grape’
m	<i>ma</i> ‘I’	<i>kamal</i> ‘blanket’	<i>am</i> ‘we’
n	<i>nika</i> ‘small’	<i>bona</i> ‘down’	<i>dan</i> ‘under/below’
ṇ	-	<i>gaṇa</i> ‘song’	<i>niṇ</i> ‘next to/near’
r	<i>raat</i> ‘blood’	<i>griṇja</i> ‘yoke’	<i>duur</i> ‘far’
ɽ	-	<i>kuɽil</i> ‘woman’	<i>zar</i> ‘root’
c	<i>caan</i> ‘moon’	<i>kucura</i> ‘dog’	<i>kaac</i> ‘unripe’
č	<i>čalee</i> ‘turn it on (IMP)’	<i>pačl</i> ‘leaves’	<i>piuč</i> ‘son’
j	<i>jiga</i> ‘tall’	<i>maṇja</i> ‘he says’	<i>aaj</i> ‘wet’
č ^h	<i>č^hajlii</i> ‘cobra’	<i>mač^hir</i> ‘mosquito’	<i>pač^h</i> ‘peel (IMP) (wood)’
v	<i>vaar</i> ‘turn/opportunity’	<i>savaa</i> ‘without’	<i>liv</i> ‘mud (IMP) (a wall)’
s	<i>so</i> ‘he/she’	<i>mistrii</i> ‘mason’	<i>aas</i> ‘eye’

(table continues)

	Word-Initial	Word-Medial	Word-Final
z	<i>zīl</i> ‘lice’	<i>aza</i> ‘up/above’	<i>māāz</i> ‘flesh’
š	<i>šu</i> ‘good’	<i>bašanda</i> ‘rain’	<i>kaš</i> ‘wish’
ž	<i>žoor</i> ‘yoke harness’	<i>šiza</i> ‘corn cob’	<i>moož</i> ‘person’
x	<i>xizmaat</i> ‘service’	<i>naxara</i> ‘flattery’	<i>mux</i> ‘spike’
ɣ	<i>yool</i> ‘round’	<i>muyri</i> ‘before/first’	<i>iy</i> ‘come (IMP)’
fi	<i>he</i> ‘that (VIS.DIST.ERG)’	<i>pihila</i> ‘afraid’	-
y	<i>yak</i> ‘one’	<i>naayi</i> ‘barber’	<i>šaay</i> ‘one hundred’
l	<i>lak</i> ‘back’	<i>palaal</i> ‘chaff of rice’	<i>patul</i> ‘behind’

2.1.3 Plosives

Plosives, or stops, in Mankiyali occur in the bilabial, dental, retroflex, and velar positions. Each place of articulation contains three distinct phonemic contrasts: voiceless unaspirated, voiceless aspirated, and voiced. Unlike most Indo-Aryan languages, Mankiyali is bereft of voiced aspirated stops. However, this is not abnormal, as several other Northwest Indo-Aryan languages also lack voiced aspirates (e.g. Hindko, Panjabi, Kashmiri, Shina, among others). The lack of aspiration for voiced stops in many, though not all, of these Northwest Indo-Aryan languages often corresponds with the presence of tone in environments where voiced aspirates were historically present (Masica 1993:102). The uvular stop, /q/, found in Panjabi and Hindko, is absent in Mankiyali. Table 3 presents a detailed classification of Mankiyali stops.

Table 3: Plosives (stops)

	Voiceless Unaspirated	Voiceless Aspirated	Voiced
bilabial	p	p ^h	b
dental	t	t ^h	d
retroflex	ʈ	ʈ ^h	ɖ
velar	k	k ^h	g

The labial stops are used quite frequently in Mankiyali. The minimal pairs (near minimal in some cases) in (1) evince the phonemic distinctions between /p/, /p^h/, and /b/.

(1) Phonemic contrast between labials in voicing and aspiration: /p/, /p^h/, and /b/

a. /p/ vs. /p^h/

<i>pul</i>	‘bridge’	<i>p^hul</i>	‘flower’ (cf. Ur. <i>p^hul</i>)
<i>paal</i>	‘precaution’	<i>p^haal</i>	‘iron tip of a plough’

b. /p/ vs. /b/

<i>pyaal</i>	‘cup’	<i>byaal</i>	‘yesterday’
<i>paṭa</i>	‘engine belt’	<i>baṭa</i>	‘stones’
<i>cupaar</i>	‘butter’	<i>ubar</i>	‘speak (IMP)’

c. /p^h/ vs. /b/

<i>p^huṭi</i>	‘she broke’	<i>buṭi</i>	‘all’
<i>p^haarve</i>	‘they tore’	<i>baara</i>	‘outside’

The dental stops in Mankiyali are voiceless unaspirated /t/, voiceless aspirated /t^h/, and voiced /d/. The contrastive distribution of the three dentals is confirmed by the examples in (2).

(2) Phonemic contrast between dentals in voicing and aspiration: /t/, /t^h/, and /d/

a. /t/ vs. /t^h/

<i>tuk^h</i>	‘smell of burned food’ (tone)	<i>t^huk</i>	‘saliva’
<i>tap</i>	‘heat’	<i>t^hap</i>	‘mud/mortar’

b. /t/ vs. /d/

<i>tu</i>	‘you (SG.NOM)’	<i>du</i>	‘two’
<i>til</i>	‘go (IMP)’	<i>dil</i>	‘heart’
<i>taak</i>	‘mugging’	<i>daak^h</i>	‘grape’
<i>sat</i>	‘seven’	<i>sad</i>	‘century’

c. /t^h/ vs. /d/

<i>t^huk</i>	‘saliva’	<i>du</i>	‘two’
<i>mat^hi</i>	‘above’	<i>badiz</i>	‘year’

The retroflex stops are voiceless unaspirated /ʈ/, voiceless aspirated /ʈʰ/, and voiced unaspirated /ɖ/. See (3) for instances of contrastive distribution.

(3) Phonemic contrast between retroflex stops in voicing and aspiration: /ʈ/, /ʈʰ/, and /ɖ/

a. /ʈ/ vs. /ʈʰ/

<i>aʈ</i>	‘edge’	<i>aʈʰ</i>	‘eight’
<i>ʈaak</i>	‘rag’	<i>ʈʰik ʈʰaak</i>	‘very good’
<i>paʈa</i>	‘engine belt’	<i>paʈʰa</i>	‘muscle’

b. /ʈ/ vs. /ɖ/

<i>ʈaak</i>	‘rag’	<i>ɖaak</i>	‘telltale’
<i>aʈa</i>	‘egg’	<i>gaɖa</i>	‘he defecates’
<i>baaʈ</i>	‘stone’	<i>ɖaaɖ</i>	‘hard’

c. /ʈʰ/ vs. /ɖ/

<i>ʈʰak</i>	‘sound of chopping wood’	<i>ɖak</i>	‘stop (IMP)’
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The phonemic distinctions between the retroflex and dentals stops are given in (4).

(4) Phonemic contrast between retroflex and dental stops

a. /t/ vs. /ʈ/

<i>taak</i>	‘mugging’	<i>ʈaak</i>	‘rag’
<i>pata</i>	‘to know’	<i>paʈa</i>	‘engine belt’
<i>kut</i>	‘where’	<i>kuʈ</i>	‘beat (IMP)’

b. /tʰ/ vs. /ʈʰ/

<i>katʰ</i>	‘drop (IMP)’	<i>paʈʰ</i>	‘make cornbread (IMP)’
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c. /d/ vs. /ɖ/

<i>daakʰ</i>	‘grape’	<i>ɖaak</i>	‘telltale’
<i>azaad</i>	‘free’ (cf. Ur. <i>azaad</i>)	<i>laad</i>	‘pampering’
<i>dab</i>	‘bury (IMP)’	<i>ɖab</i>	‘large field’

Velar stops are distinguished as voiceless unaspirated /k/, voiceless aspirated /k^h/, and voiced /g/. The minimal and near-minimal pairs in (5) illustrate the phonemic contrasts between the three consonants.

(5) Phonemic contrast between velar stops in voicing and aspiration: /k/, /k^h/, and /g/

a. /k/ vs. /k^h/

<i>lak</i>	‘back’	<i>lak^h</i>	‘100,000’
<i>bak</i>	‘catch (IMP)’	<i>bak^h</i>	‘foreign’
<i>kaala</i>	‘black’	<i>k^hala</i>	‘you will eat’
<i>kuɾɪl</i>	‘woman’	<i>k^hur</i>	‘foot’

b. /k/ vs. /g/

<i>bak</i>	‘catch (IMP)’	<i>bag</i>	‘flow (IMP)’
<i>kaaṇaa</i>	‘one-eyed man’	<i>gaṇaa</i>	‘song’

c. /k^h/ vs. /g/

<i>bak^h</i>	‘foreign’	<i>bag</i>	‘flow (IMP)’
<i>k^hũũ</i>	‘well’	<i>gũũ</i>	‘feces’
<i>k^hala</i>	‘you will eat’	<i>gala</i>	‘money box/collar/throat’

2.1.4 Nasals

Mankiyali has three phonemic nasals: bilabial /m/, alveolar /n/, and retroflex /ŋ/. When followed by a velar consonant, nasals adopt the velar place of articulation and surface as [ŋ]. While some Indo-Aryan languages consider [ŋ] its own phoneme (e.g. Assamese, Nepali, Saraiki, and Bhojpuri), the velar nasal has an extremely restrictive distribution in Mankiyali, only appearing before the five velar consonants as a homorganic nasal. [ŋ] exists in complete complementary distribution with the other Mankiyali nasals, so it is not considered a phoneme. The pairs in (6) demarcate the phonemic contrasts of Mankiyali’s three phonemic nasals.

(6) Phonemic contrast between nasal consonants: /m/, /n/, and /ŋ/

a. /m/ vs. /n/

<i>maaz</i>	‘meat’	<i>naas</i>	‘nose’
<i>tum</i>	‘process of making bedding with cotton’	<i>un</i>	‘wool’ (cf. Ur. <i>uun</i>)

b. /m/ vs. /ŋ/

<i>kaam</i>	‘work’	<i>kaaŋ</i>	‘one-eyed woman’
<i>tum</i>	‘process of making bedding with cotton’	<i>uŋ</i>	‘our’
<i>camara</i>	‘skin’	<i>zaŋa</i>	‘man’

c. /n/ vs. /ŋ/

<i>dan</i>	‘under/below’	<i>daŋ</i>	‘she will give’
<i>un</i>	‘wool’ (cf. Ur. <i>uun</i>)	<i>uŋ</i>	‘our’

2.1.5 Flaps

Flaps in Mankiyali are classified as alveolar /r/ and retroflex /ɽ/. As mentioned in footnote 1, the phoneme /ŋ/ is frequently realized as [ɽ̃] phonetically, but [ɽ̃] does not constitute its own phoneme in Mankiyali. Both /r/ and /ɽ/ appear with relative frequency. Retroflex flaps, like retroflex nasals, are not found in the word-initial position and only appear inter vocally and post vocally. The phoneme /r/ appears word-initially, word-medially, and word-finally. The examples in (7) demonstrate the contrastive distribution between the two flaps:

(7) Phonemic contrast between flap consonants: /r/ vs. /ɽ/

<i>biira</i>	‘male buffalo’	<i>biɽa</i>	‘button’
<i>biir</i>	‘term of endearment for older brother’	<i>piɽ</i>	‘stool’
<i>ɽukuur</i>	‘basket’	<i>kukuur</i>	‘hen’

Phonemic contrasts between the retroflex flap, /ɽ/, and the other retroflex phonemes are given in (8). For many Indo-Aryan languages, /ɽ/ is in complementary distribution with /d/ (e.g., in Marathi, Gujarati, and others (Masica 1993:97)), but in Mankiyali the two consonants contrast

with each other, as /d/ is also found inter vocally and post vocally in the language. (8b) provides minimal pairs for /r/ and /d/.

(8) Phonemic contrast between retroflex flap and other retroflex consonants

a. /r/ vs. /ŋ/

<i>zara</i>	‘roots’	<i>zana</i>	‘man’
<i>ɦat^hora</i>	‘hammer’	<i>gyona</i>	‘wheat (GEN)’

b. /r/ vs. /d/

<i>bar</i>	‘heap of wheat crops’	<i>baɖ</i>	‘roots leftover from wheat crops’
<i>camari</i>	‘skins’	<i>k^hadi</i>	‘potholes’

c. /r/ vs. /t/

<i>luŋaar</i>	‘fox’	<i>baaɖ</i>	‘stone’
<i>kara</i>	‘heap of burning wood’	<i>baɖa</i>	‘stones’

2.1.6 Fricatives

The inventory of fricatives in Mankiyali is relatively symmetrical and quite large compared to most Indo-Aryan fricative inventories (Masica 1993:98). A phonemic voicing contrast exists in the alveolar, post-alveolar, and velar positions. The glottis is the only place of articulation for fricatives in Mankiyali that does not recognize a contrast in voicing. Whereas voiceless /h/ is present in many Indo-Aryan languages (e.g. Kashmiri, Hindi, and most of the Dardic languages), Mankiyali has a voiced counterpart. However, the glottal fricative only appears in prevocalic and intervocalic positions, so the voicing is perhaps triggered by the vocalic environment. The voicing of the glottal fricative also takes places in Hindko, Panjabi, and Saraiki. Table 4 provides a detailed classification of the seven Mankiyali fricative phonemes.

Table 4: Fricatives

	Voiceless	Voiced
alveolar	s	z
post-alveolar	š	ž
velar	x	ɣ
glottal	-	ɦ

The examples in (9) show the contrastive distribution between the labial aspirated stop, /p^h/, and the labio-dental approximant.

- (9) Phonemic contrast between labial aspirated stop and labio-dental approximant: /p^h/ vs. /v/

<i>p^haaya</i>	‘figs’	<i>vaya</i>	‘he finished’
<i>p^hal</i>	‘fruit’	<i>val</i>	‘knot’
<i>naap^h</i>	‘navel’	<i>nav</i>	‘new’

The contrastive distributions between the different fricatives in terms of place of articulation are provided in (10).

- (10) Phonemic contrast between fricatives by place of articulation

- a. /s/ vs. /š/

<i>soora</i>	‘narrow’	<i>šoora</i>	‘a hole/a bite of food’
<i>pasanda</i>	‘desires’	<i>bašanda</i>	‘rain’
<i>siir</i>	‘milk’	<i>šiira</i>	‘sugar water’

- b. /z/ vs. /ž/

<i>goraz</i>	‘home (GEN)’	<i>šooraž</i>	‘sixteen’
<i>tyoz</i>	‘their’	<i>oož</i>	‘dew’

- c. /ɣ/ vs. /ɦ/

<i>yool</i>	‘round’	<i>ɦoola</i>	‘wild spinach’
<i>yal</i>	imperative marker	<i>ɦal</i>	‘plough (noun)’

d. /x/ vs. /ħ/

<i>xii</i>	‘nature’	<i>ħil</i>	‘type of bird’
<i>xaraab</i>	‘faulty’	<i>ħaraazi</i>	‘I misplaced’
<i>baxiil</i>	‘stingy’	<i>sahii</i>	‘correct’

The examples in (11) illustrate the phonemic distribution of fricatives in terms of voicing.

(11) Phonemic contrast between fricatives by voicing

a. /s/ vs. /z/

<i>aas</i>	‘eye’	<i>aaz</i>	‘today’
<i>sooṛa</i>	‘narrow’	<i>zoor</i>	‘strength’
<i>ḷusa</i>	‘body’	<i>uzala</i>	‘white’

b. /š/ vs. /ž/

<i>kaaš</i>	‘shovel’	<i>k^haaž</i>	‘sweep (IMP)’
<i>šiša</i>	‘glass’	<i>šiža</i>	‘corn cob’

c. /x/ vs. /χ/

<i>muluux</i>	‘homeland’ (cf. Ur. <i>molk</i>)	<i>p^huuχ</i>	‘blow (IMP)’
<i>xo</i>	‘although’	<i>χool</i>	‘round’

The phonemic contrasts between velar fricatives and the velar stops are established by the examples in (12).

(12) Phonemic contrast between velar fricatives and velar stops

a. /x/ vs. /k/

<i>xaše</i>	‘some/a little’	<i>kaš</i>	‘wish’
<i>muluxa</i>	‘homelands’	<i>paṭuka</i>	‘turban’

b. /χ/ vs. /g/

<i>yalat</i>	‘wrong’	<i>gala</i>	‘money box/collar/throat’
<i>aya</i>	‘has come’	<i>baga</i>	‘it flows’
<i>yuṭar</i>	‘tree bud’	<i>guṭ^ha</i>	‘knee’
<i>biyali</i>	‘empty’	<i>ḷiga</i>	‘tall/long’

2.1.7 Affricates

There are four phonemic affricates in Mankiyali. The voiceless unaspirated alveolar affricate, /c/, the voiceless unaspirated post-alveolar affricate, /č/, and the voiced alveolar affricate /j/ are all quite common, but the voiceless aspirated post-alveolar affricate, /č^h/, carries a small functional load. As is evident from table 5, the distribution of affricates is somewhat asymmetric. While Panjabi and Hindko possess the same inventory of post-alveolar affricates as Mankiyali, they lack the voiceless unaspirated alveolar affricate, /c/, found in Mankiyali. As Masica (1993) notes, several Indo-Aryan languages dispersed throughout the Indian subcontinent have replaced /č/ with /c/ in some cases while retaining /č/ as a separate phoneme (e.g., Marathi, Konkani, and Kashmiri), so this may be the case in Mankiyali as well.

Table 5: Affricates

	Voiceless Unaspirated	Voiceless Aspirated	Voiced
alveolar	c	-	-
post-alveolar	č	č ^h	j

Consider the minimal and near minimal pairs in (13) for an illustration of the contrastive distribution between the different affricates.

(13) Phonemic contrast between affricates: /c/, /č/, /č^h/, /j/

a. /c/ vs. /č/

<i>caan</i>	‘moon’	<i>čaa</i>	‘three’
<i>cuka</i>	‘sour’	<i>čuka</i>	‘animal training stick’
<i>kaac</i>	‘unripe’	<i>paač</i>	‘spinach leaf (a culinary dish)’

b. /č/ vs. /č^h/

<i>pači</i>	‘leaves’	<i>pač^hi</i>	‘type of basket’
<i>paač</i>	‘spinach leaf (a culinary dish)’	<i>pač^h</i>	‘strip (IMP) (wood)’
<i>čaa</i>	‘three’	<i>č^haap</i>	‘draw (IMP)’
<i>bači</i>	‘chicks’	<i>kač^hi</i>	‘shorts’

c. /c/ vs. /č^h/

<i>kacır</i>	‘mules’	<i>mač^hır</i>	‘mosquito’
<i>pac (ya)</i>	‘(have) ripened’	<i>pač^h</i>	‘strip (IMP) (wood)’
<i>cab</i>	‘chew (IMP)’	<i>č^haab</i>	‘side of the mouth’

d. /č/ vs. /ǰ/

<i>pača</i>	‘leaf’	<i>aǰa</i>	‘wet (M.SG)’
<i>paač</i>	‘spinach leaf (a culinary dish)’	<i>aaǰ</i>	‘wet (F.SG)’
<i>čuka</i>	‘animal training stick’	<i>ǰusa</i>	‘body’

e. /č^h/ vs. /ǰ/

<i>baač^h</i>	‘community fundraiser’	<i>kaaǰ</i>	‘buttonhole stitch’
<i>kač^ha</i>	‘armpits’	<i>aǰa</i>	‘wet (M.SG)’

The phonemic contrast between the alveolar affricate and the corresponding alveolar stop and alveolar fricative is demonstrated in (14).

(14) Phonemic contrast between /c/, /t/, and /s/

a. /c/ vs. /t/

<i>kucura</i>	‘dog’	<i>kutur</i>	‘cut (IMP) (veggies, fruit)’
<i>kaac</i>	‘unripe’	<i>kaat</i>	‘type of sewing scissors’

b. /c/ vs. /s/

<i>ciir</i>	‘late’	<i>siir</i>	‘milk’
<i>coor</i>	‘four’	<i>soor</i>	‘narrow’
<i>pōōc</i>	‘reach (IMP)’	<i>tapoos</i>	‘asking’

The phonemic distinction between the voiceless, voiceless aspirated, and voiced post-alveolar affricates and their corresponding alveolar/post-alveolar stops and fricatives are illustrated in (15).

(15) Phonemic contrast between /č/, /č^h/, /ǰ/, /t/, /t^h/, /d/, /š/, and /ž/

a. /č/ vs. /t/

<i>pača</i>	‘leaf’	<i>pata</i>	‘behind/knowing’
<i>čalee</i>	‘turn it on (IMP)’	<i>tal</i>	‘palm’

b. /č/ vs. /š/

<i>puuč</i>	‘son’	<i>puuš</i>	‘cat’
<i>pičĩĩ</i>	‘uncle’	<i>pišĩĩ</i>	‘1-2pm prayer time’
<i>čĩir</i>	‘third’	<i>šĩil</i>	‘cold’

c. /č^h/ vs. /t^h/

<i>č^hal</i>	‘skill’	<i>t^hal</i>	‘floor’
<i>pač^h</i>	‘strip (IMP) (wood)’	<i>kat^h</i>	‘drop (IMP)’
<i>č^hapaar</i>	‘storage shed/small roof’	<i>t^hap</i>	‘mud/mortar’

d. /č^h/ vs. /š/

<i>č^hat</i>	‘roof’	<i>šat</i>	‘wipe (IMP)’
<i>č^hal</i>	‘skill’	<i>šal</i>	‘paralysis’
<i>pič^hãĩ</i>	‘brunch’	<i>pišãĩ</i>	‘type of black/brown hairy centipede’

e. /j/ vs. /d/

<i>ǰandara</i>	‘lock (noun)’	<i>danda</i>	‘teeth of a saw’
<i>aaǰ</i>	‘wet’	<i>daraad</i>	‘pain’
<i>baǰa</i>	‘handle (noun)’	<i>danda</i>	‘teeth of a saw’

f. /j/ vs. /ž/

<i>aaǰ</i>	‘wet’	<i>žããž</i>	‘watermill’
<i>baǰoor</i>	‘small corncob’	<i>mažoor</i>	‘bee’
<i>ǰandara</i>	‘lock (noun)’	<i>žano</i>	‘how (COND)’

2.1.8 Approximants

Approximants in Mankiyali include labiodental /v/, palatal /y/, and alveolar lateral /l/.

Labio-dental [v] and labio-velar [w] are allophonic variants of /v/. The phonemic contrasts between the three approximants are illustrated in (16) and the contrasts between /l/ and /r/ are given in (17).

(16) Phonemic contrast between approximants: /v/, /y/, and /l/

a. /v/ vs. /y/

<i>val</i>	‘knot’	<i>yal</i>	‘she will come’
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b. /v/ vs. /l/

<i>kvaar</i>	‘unmarried girl’	<i>klak</i>	‘insistence’
<i>savaa</i>	‘without’	<i>palaal</i>	‘chaff of rice’
<i>p^haav</i>	‘father’s sister’	<i>kavaal</i>	‘head’

c. /y/ vs. /l/

<i>yak</i>	‘one’	<i>lak</i>	‘back’
<i>koy</i>	‘someone’ (cf. skr. <i>kuii</i>)	<i>hol</i>	‘light’
<i>pasaal</i>	‘rib’	<i>šaay</i>	‘one hundred’

(17) Phonemic contrast between /r/ and /l/

a. /r/ vs. /l/

<i>coor</i>	‘four’	<i>cool</i>	‘rice’
<i>raat</i>	‘blood’	<i>laat</i>	‘kick (noun)’
<i>piiri</i>	‘religious man (ERG)’	<i>piili</i>	‘yellow’

2.2 Vowels

2.2.1 Vocalic Inventory

The vocalic inventory in Mankiyali is provided in Table 6. The seventeen phonemic vowels that Mankiyali possesses are distinguished in terms of their length, height, backness, tenseness, and nasality. As is typical, the Mankiyali front vowels are unrounded, and the back vowels rounded. The symmetry of the Mankiyali vowel system is striking, but there are gaps in which distinctions could be, but are not, made. For instance, every vowel in the system distinguishes between long non-nasal and long nasal vowels, except the mid front tense long vowel, /ee/, makes no such distinction.

Compared to Indo-Aryan languages like Hindi/Urdu and Panjabi, the Mankiyali vocalic inventory is normative in its size and symmetry (Masica 1993:110), but certain peculiarities do exist. Namely, both quantity and quality play a role in the phonemic distinction of vowels in Mankiyali, so analyses that do not account for both types of contrast are untenable. Therefore,

though quantitative distinction in Indo-Aryan vowel inventories is sometimes represented solely in terms of vowel type (i.e. “peripheral instead of “long” and “centralized” instead of “short”)², such an analysis is not possible in Mankiyali because the vowels have three distinctive features, nasality aside: length, place, and laxness. For instance, the high front short lax vowel, /ɪ/, not only contrasts with the high front short tense vowel, /i/, but also with the high front long lax vowel, /ɪ̃/. An analysis that only distinguishes between “peripheral” and “centralized” cannot account for this.

Table 6: Vocalic Inventory

		Front			Central			Back		
		short	long	long nasal	short	long	long nasal	short	long	long nasal
High	tense	i	ii	ĩĩ				u	uu	ũũ
	lax	ɪ	ɪ̃	ĩ̃ĩ̃						
Mid	tense	e	ee					o	oo	õõ
	lax									
Low	tense				a	aa	ãã			
	lax									

2.2.2 Vocalic Distribution and Variation

Most vowels occur in initial, medial, and final positions, as set forth in table 7. The phonemes, /u/ and /a/, occur relatively frequently in word-initial position, when compared to the other vowels. Also, note that long oral vowels do appear word-initially, but this only seems to be true in monosyllabic words.

Table 7: Distribution of Vowels

	Word-Initial	Word-Medial	Word-Final
i	<i>isirava</i> ‘therefore’	<i>zimidaar</i> ‘farmer’	<i>buṭi</i> ‘all’
ii	<i>iiz</i> ‘to this’	<i>kikiir</i> ‘hens’	<i>kiṣṭii</i> ‘boat’

(table continues)

² Bashir & Connors (2019), as well as (Masica 1993), choose to categorize Indo-Aryan vowel systems with similar patterns to that of Mankiyali in terms of “centralized” and “peripheral” rather than “short” and “long”.

	Word-Initial	Word-Medial	Word-Final
ĩĩ	ĩĩ ‘Eid’	gĩĩtii ‘pickaxe’	mažĩĩ ‘honey’
ɪ	ɪy ‘come (IMP)’	lɪk ‘backs’	zɪ ‘that’
ɪɪ	ɪɪ ‘blind’	ɣalbɪla ‘grain strainers’	aazvɪɪ ‘they were’
ĩĩ	-	tilkĩĩz (vɪ) ‘had slipped’	žĩĩ ‘which’
e	-	hɛt ‘there’	sve ‘ashes’
ee	eej ‘wet (F.PL)’	meel ‘mother’	muklee ‘open (IMP)’
a	asoor ‘walnut’	kar ‘wood’	ɪtɪfaaka ‘consensus’
aa	aaʃ ‘wet (F.SG)’	munaafki ‘self-righteousness’	čaa ‘three’
ãã	ããɣura ‘seedling’	barkããdɪ ‘let it boil’	gãã ‘village’
u	uzala ‘white’	majburii ‘suffering’	kutru ‘he chopped’
uu	-	mazduura ‘laborers’	kutruu ‘to cut’
ũũ	ũũtʰ ‘camel’	pũũda ‘beetle’	gũũ ‘feces’
o	oçʰaar ‘pillowcase’	kamzorii ‘weakness’	so ‘sleep (IMP)’
oo	ooɣ ‘part of a plough’	piŋgoore ‘will return’	goo ‘ox’
õõ	-	kõõtaar ‘pigeon’	yõõ ‘snow’

2.2.3 Distinctions in Length

Vowel length is phonemic in Mankiyali, and every vowel takes advantage of these length distinctions, as confirmed by the minimal pairs in (18):

(18) Phonemic contrasts in length between vowels

a. /i/ vs. /ii/

til ‘go (IMP)’ tiil ‘matchsticks’

b. /ɪ/ vs. /ɪɪ/

til ‘sesame seed’ tiil ‘oil’

c. /e/ vs. /ee/

sve ‘ashes’ svee ‘sleep (IMP)’

d. /a/ vs. /aa/

kar ‘wood’ kaar ‘cook (IMP)’

e. /u/ vs. /uu/

 *tu*l ‘scaffolding’ *tuu*l ‘matchstick’

f. /o/ vs. /oo/

 po ‘soil’ *poo* ‘boy’

2.2.4 Distinctions in Tenseness

The minimal pairs in (19) demonstrate the phonemic distinctions between the high front tense vowels and the high front lax vowels.

(19) Phonemic contrasts in tenseness between vowels

a. /i/ vs. /ɪ/

 *ti*l ‘go (IMP)’ *ti*l ‘sesame seed’

b. /ii/ vs. /ɪɪ/

 *tii*l ‘matchsticks’ *tiɪ*l ‘oil’

c. /ĩĩ/ vs. /ĩi/

 kĩĩ ‘insect’ *kĩi* ‘which (QU)’

2.2.5 Distinctions in Quality

Distinctions between vowels based on tongue height and backness are provided in (20)-(22):

(20) Phonemic contrasts in quality between front vowels

a. /i/ vs. /e/

 hi ‘this (VIS.PROX.NOM)’ *he* ‘that (VIS.DIST.NOM)’

b. /ɪ/ vs. /e/

 sɪ ‘they sleep’ *sve* ‘ashes’

c. /ii/ vs. /ee/

ciir 'late' ceer 'March'

d. /ɪɪ/ vs. /ee/

gɪɪ 'oxen' gee 'cows'

(21) Phonemic contrasts in quality between central vowels

a. /a/ vs. /e/

baɖ 'wheat harvest leftovers' beɖ 'cot'

b. /a/ vs. /o/

na (NEG) no 'nine'

c. /aa/ vs. /ee/

taal 'forehead' teel 'foreheads'

d. /aa/ vs. /oo/

gaa 'cow' goo 'ox'

e. /ãã/ vs. /õõ/

gãã 'village' kõõ 'why'

(22) Phonemic contrasts in quality between back vowels

a. /u/ vs. /o/

goɾa 'homes' guɾ 'brown sugar'

b. /uu/ vs. /oo/

aŋguur 'finger' goor 'home'

c. /ũũ/ vs. /õõ/

kũũ 'mulberry tree' kõõ 'why'

2.2.6 Distinctions in Nasality

As previously stated, every vowel takes advantage of distinctions in nasality except for the mid front tense vowel, /ee/. Examples of minimal/near minimal pairs that show distinctions in nasality are given in (23). Phonemic nasal vowels most often appear in the syllable-final position, but there are cases in which a coda consonant follows a nasal phoneme (e.g., *ũũtʰ* ‘camel’, *žããž* ‘watermill’, *xõõk* ‘type of partridge’ and *tilkĩz* (*vi*) ‘had slipped’).

(23) Phonemic contrasts in nasality between vowels

- a. /ii/ vs. /ĩĩ/

masii ‘fish’ masĩĩ ‘fly’

- b. /ɪɪ/ vs. /ĩĩ/

žɪɪ ‘then’ žĩĩ ‘which’

- c. /aa/ vs. /ãã/

gaa ‘cow’ gãã ‘village’

- d. /oo/ vs. /õõ/

koo ‘who’ kõõ ‘why’

- e. /uu/ vs. /ũũ/

guur ‘brown’ gũũ ‘feces’

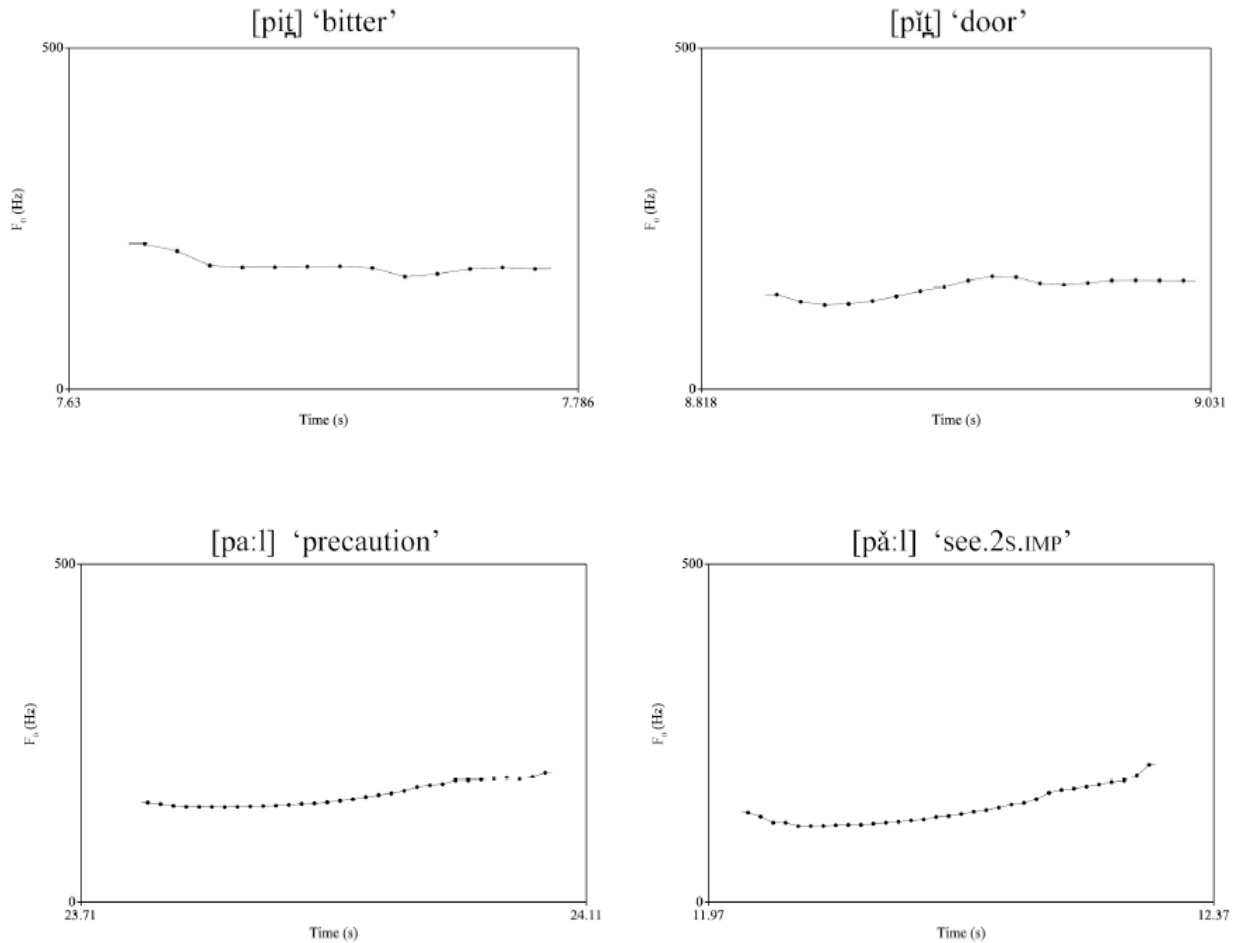
2.3 Tone

Lexical tone in Mankiyali is phonemic and utilizes a binary contrast between tonal and atonal segments. However, words with tone are much less common than those without tone.

When spoken in isolation, the pitch contour of tonal segments starts lower than an atonal segment and rises toward the end of the word. The figures in (10) below, reproduced from

Munshi & Englert (in press), presents the pitch contours for two minimal pairs in Mankiyali distinguished by tone (reproduced below).

(1) Minimal Pairs for tone in Mankiyali



The words in (10) were all elicited using the sentence frame “He says ... slowly”.

Extensive work is required to obtain a definitive understanding of how tone functions in Mankiyali. See Munshi & Englert (in press) for a brief sketch of Mankiyali’s tonal features.

CHAPTER 3

PHONOTACTICS

This chapter explores the different ways phonemes in Mankiyali can be combined to form syllables. First, the basic syllable types are discussed, and then acceptable consonant and vowel clusters are examined. A consonant cluster is defined as a sequence of at least two phonemically distinct consonants without a vowel phoneme intervening. Similarly, a vowel cluster is a sequence of two phonemically distinct vowels without a consonant phoneme intervening. By and large, the phonotactics of Mankiyali are consistent with that of other areal languages (Bashir & Connors 2019:55-60).

3.1 Syllable Structure

Mankiyali possesses a rich variety of mono-syllabic, di-syllabic, and poly-syllabic words. See (1) for examples of words in Mankiyali categorized by number of syllables. As shown in (1c), words with four syllables are not uncommon in Mankiyali. The only word found thus far to be five or more syllables in length is *moṭarseekalaz* ‘motorcycle (ACC)’, borrowed from English ‘motorcycle’.

(1) Mono-, di-, and poly-syllabic words

a. Monosyllabic words

<i>a</i>	‘and’
<i>šu</i>	‘good’
<i>iy</i>	‘come (IMP)’
<i>čuk</i>	‘a bite’
<i>gul</i>	‘spring’
<i>bunḍ</i>	‘buttock’
<i>puḍ</i>	‘food’
<i>maaz</i>	‘flesh’
<i>piing</i>	‘swing’
<i>tva</i>	‘I wash’
<i>draz</i>	‘thump/bang’

b. Disyllabic words

<i>a.za</i>	‘above’
<i>k^he.ya</i>	‘eat (IMP.PL)’
<i>ħa.dooʀ</i>	‘bone’
<i>ak.sar</i>	‘often’
<i>gul.yoz</i>	‘grain’
<i>luŋ.gaar</i>	‘fox’

c. Polysyllabic words

<i>ca.ma.ri</i>	‘skins’
<i>ba.řan.da</i>	‘rain’
<i>jan.dar.yoz</i>	‘locks’
<i>a.na.gu.gu</i>	‘owl’
<i>riř.ti.daa.ra</i>	‘relatives’
<i>so.mun.da.ra</i>	‘seas’
<i>mil.'yan.di.yi</i>	‘from lightning’
<i>mo.řar.see.ka.laz</i>	‘motorcycle (ACC)’ (cf. eng. <i>mootərsaikal</i>)

Both open and closed syllables are present in Mankiyali. Syllables with both short vowels and long vowels are permitted as well. From the data collected so far, an exhaustive list of possible syllable types is given in (2):

(2) Syllable Types in Mankiyali

a. (C)V syllables

<i>so</i>	‘sleep (IMP)’
<i>ma</i>	‘I’
<i>řu</i>	‘good’
<i>tu.ka</i>	‘fabric’
<i>ga.la.la</i>	‘will melt’
<i>a.na.gu.gu</i>	‘owl’

b. (C)VC syllables

<i>aɬ^h</i>	‘eight’
<i>am</i>	‘we’
<i>dil</i>	‘heart’
<i>pit</i>	‘bitter’
<i>lid</i>	‘donkey feces’

<i>p^har.za</i>	‘tomorrow’
<i>ču.rul</i>	‘roam’
<i>lak^h.ser</i>	‘many’
<i>jan.dar.yoz</i>	‘locks’

c. (C)VV syllables

<i>ii</i>	‘from him (PROX)’
<i>čaa</i>	‘three’
<i>yu.tai</i>	‘tree bud’
<i>kur.sii</i>	‘chair’
<i>pii.li</i>	‘yellow’
<i>boo.ɖaz</i>	‘board’
<i>ɖee.kii</i>	‘postman’
<i>bãã.yĩ</i>	‘rooster’
<i>ɦa.taa.lu.ʒa</i>	‘weeding’
<i>caa.rɪɪ.va.la</i>	‘shepherd’
<i>xaa.pi.ra.ka</i>	‘bats’

d. (C)VVC syllables

<i>oor</i>	‘pickle spice’
<i>baaɖ</i>	‘stone’
<i>fa.raaz</i>	‘morning’
<i>mat.laab</i>	‘to mean’
<i>baa.leez</i>	‘air’
<i>seel.zɪ</i>	‘goat’
<i>laal.tɪŋ</i>	‘kerosene lamp’
<i>zaan.daak</i>	‘child’
<i>ti.sɪɪr</i>	‘sticks’
<i>a.ram.daaɾ</i>	‘comfort’
<i>laas.le.yal</i>	‘smooth’

e. (C)VC₁C₂ syllables

<i>band</i>	‘finger joint’
<i>bunɖ</i>	‘buttock’
<i>panz</i>	‘five’
<i>aŋʃ</i>	‘intestine/gut’
<i>sa.kɪŋt</i>	‘second’ (cf. eng. <i>sekənd</i>)
<i>vaxt</i>	‘time’ (cf. Ur. <i>vaxt</i>)
<i>aŋg.raa.ra</i>	‘weed’
<i>paar.saŋg</i>	‘ladder’

<i>gand.gii</i>	‘dirtiness’ (cf. Ur. <i>gandgi</i>)
<i>sang.toob</i>	‘friendship’

f. CVVC₁C₂ syllables

<i>piing</i>	‘swing’
<i>beeng.nii</i>	‘purple’
<i>ba.zaand</i>	‘April’
<i>tiiŋk</i>	‘wood stove(s)’

g. C₁C₂V(C) syllables

<i>pva</i>	‘he drinks’
<i>pro.p^he.sar</i>	‘professor’ (cf. eng. <i>prəfəsər</i>)
<i>tva</i>	‘I wash’
<i>tyoz</i>	‘to them (VIS.DIST)’
<i>klak</i>	‘insistence’
<i>draz</i>	‘thump/bang’
<i>grij.ja</i>	‘yoke’
<i>frij</i>	‘refrigerator’ (cf. eng. <i>frij</i>)
<i>sve</i>	‘they sleep’
<i>žva</i>	‘he ploughs’
<i>xva.ree</i>	‘sister’s son’

h. C₁C₂VV(C) syllables

<i>kvaar</i>	‘unmarried girl’
<i>kruur</i>	‘ploughing a watery field’
<i>kyaar</i>	‘nape/small place for flowering’
<i>braan.daa</i>	‘verandah’
<i>byaal</i>	‘yesterday’
<i>dree.val</i>	‘driver’ (cf. eng. <i>dravər</i>)
<i>gvaal</i>	‘horse stable’
<i>gyõõ</i>	‘wheat’
<i>sraad</i>	‘dried grass’

The examples above show that the following syllable types are permitted in Mankiyali: (C)V, (C)VC, (C)VV, (C)VVC, (C)VC₁C₂, CVVC₁C₂, C₁C₂V(C), and C₁C₂VV(C). Compared to syllables with a single consonant, consonant clusters are not as prevalent. The number of segments in a consonant cluster is limited to two, both syllable-initially and syllable-finally. No

sequences of three consecutive consonants have been found to appear in Mankiyali tautosyllabically. Both short and long vowels often appear in conjunction with a syllable-initial or syllable-final cluster, but never with both. As a result, the maximum syllable size may be set at CVCC or CCVC for syllables with short vowels and CCVVC or CVVCC for those with long vowels.³ Some areal languages, such as Hindko and Panjabi, also lack syllables with both initial and final consonant clusters, but Saraiki, an Indo-Aryan language spoken in Southern Punjab, does allow them (e.g., *skutr* ‘stepson’) (Bashir & Connors 2019:56-60). This is also true of Kashmiri (e.g. *kranz* ‘skeleton (of a human or non-human object)’. Further research is needed to confirm whether CCVCC or CCVVCC syllables are present in Mankiyali, but if they do occur, they are rare.

3.2 Consonant Clusters

As previously stated, bi-consonantal clusters occur with some frequency in Mankiyali, but tri-consonantal clusters are not permitted. A restriction on syllable-initial consonant clusters, consistent with the Sonority Sequencing Principle (Selkirk 1984), prevents obstruent consonants from appearing adjacent to the nucleus when part of a cluster. As such, initial clusters are restricted to the sequence obstruent-sonorant, as demonstrated by the examples in (2g-h) above and repeated in (3).

(3) Syllable-initial clusters

<i>pva</i>	‘he drinks’
<i>pro.p^he.sar</i>	‘professor’ (cf. eng. <i>prəfɛsər</i>)
<i>tva</i>	‘I wash’
<i>tyoz</i>	‘to them (VIS.DIST)’
<i>klak</i>	‘insistence’

³ The only word found to possess a CCVCC syllable is /klark/ (cf. eng. ‘clerk’), but this word is pronounced with considerable variation from speaker to speaker. Alternate pronunciations include /klaarak/ and /kalarak/. This indicates that onset and coda clusters are perhaps never permitted in the same syllable in Mankiyali.

<i>draz</i>	‘thump/bang’
<i>grɪj.ʃa</i>	‘yoke’
<i>frij</i>	‘refrigerator’ (cf. eng. <i>frij</i>)
<i>sve</i>	‘they sleep’
<i>žva</i>	‘he ploughs’
<i>xva.ree</i>	‘sister’s son’
<i>kvaar</i>	‘unmarried girl’
<i>kruur</i>	‘ploughing a watery field’
<i>kyaar</i>	‘nape/small place for flowering’
<i>braan.ɖaa</i>	‘verandah’
<i>byaal</i>	‘yesterday’
<i>dree.val</i>	‘driver’ (cf. eng. <i>dravər</i>)
<i>gvaal</i>	‘horse stable’
<i>gyõõ</i>	‘wheat’
<i>sraaɖ</i>	‘dried grass’
<i>pan.dro</i>	‘fifteen’

When words that are borrowed into Mankiyali would violate this restriction, vowel epenthesis takes place to break up the illicit cluster, as shown in (4):

- (4) Loanwords with a sonorant-obstruent sequence prevented by epenthesis

<i>sakuul</i>	‘school’ (cf. eng. <i>skuul</i>)
<i>sakiim</i>	‘scheme’ (cf. eng. <i>skiiim</i>)

Syllable-final clusters, like syllable-initial clusters, are also subject to the sonority sequencing principle as shown by the examples in (5). Note that syllable-final clusters typically take the form of NC, where N is a nasal and C is another consonant. Thus far, the only example found to not follow this pattern is the loanword *vaxt* ‘time’ (cf. Ur. *vaxt*).

- (5) Syllable-final clusters

<i>tɪŋk</i>	‘wood stove(s)’
<i>hond</i>	‘like this’
<i>paar.sanɟ</i>	‘ladder’
<i>panz</i>	‘five’
<i>majʃ (pɪya)</i>	‘he can say’
<i>aŋʃ</i>	‘intestine/gut’
<i>gand.gii</i>	‘dirtiness’ (cf. Ur. <i>gandgi</i>)
<i>vaxt</i>	‘time’ (cf. Ur. <i>vaxt</i>)

3.3 Vowel Clusters

Vowel clusters (sequences of two consecutive vowels) in Mankiyali occur both morpheme-internally and cross-morphemically. However, from the data collected, vowel clusters seem to be relegated to the word-final position. The most common clusters of vowels in Mankiyali are [ai], [aɪ], [ou], and [õĩ]. Words in (6) provide examples of cross-morphemic vowel clusters and words in (7) provides examples of morpheme-internal vowel clusters.

(6) Cross-morphemic vowel clusters

[au]:	<i>piṭila-u</i>	‘he sits-COP.M’
	<i>ḡusa-u</i>	‘body-COP.M’
	<i>mala-u</i>	‘father-COP.M’
	<i>poora-u</i>	‘grandson-COP.M’
	<i>na-u</i>	‘NEG-COP.M’
[ou]:	<i>po-u</i>	‘boy-COP.M’
	<i>nó-u</i>	‘nine-COP.M’
	<i>yó-u</i>	‘snow-COP.M’
	<i>ko-u</i>	‘who-COP.M’
	<i>ṭʰamṭʰooka-u</i>	‘woodpecker-COP.M’
[ai]	<i>iza-i</i>	‘from here-COP.F’
	<i>čurl-a-i</i>	‘walk-F.SG.PRS-COP.F’

(7) Morpheme-internal vowel clusters

[õĩ]	<i>tom-õĩ</i>	‘you (PL)-ABL’
	<i>am-õĩ</i>	‘we-ABL’
	<i>puč-õĩ</i>	‘son-ABL’
	<i>pič-yõĩ</i>	‘uncle-ABL’
[ãĩ]	<i>sat-ãĩ</i>	‘seven-ABL’
	<i>mol-ãĩ</i>	‘maternal uncle-ABL’
[ai]	<i>pit-yai</i>	‘bitter-NMLZ’
	<i>haz-ai</i>	‘laugh-1/3SG.F’
[aɪ]	<i>kačanaɪ</i>	‘pinky finger’
	<i>kuṛkuṛaɪ</i>	‘dove’
	<i>uraɪ</i>	‘jaw’
	<i>kuṛkaɪ</i>	‘mouse trap’

As is evident from the examples above, the only cases of cross-morphemic vowel clusters arise with the attachment of the copula – the masculine /u/ and the feminine /i/ – to the right edge

of a word. The Mankiyali copula is most likely an enclitic because it forms a single prosodic unit with the word it attaches to and, unlike an affix, can attach to words of several different syntactic categories (e.g., verbs, nouns, pronouns, and adverbs).

Furthermore, from the data collected thus far, it appears that the clusters [õĩ] appears exclusively in the ablative case marker. Conversely, the vowel clusters, [ai] and [aɪ], experience robust usage in many different environments; though, [aɪ] never appears cross-morphemically. It seems that vowel clusters in Mankiyali only take place when the first vowel is [-high], and the second vowel is [+high].

CHAPTER 4

PHONOLOGICAL PROCESSES

This chapter describes and analyzes several phonological processes that take place in Mankiyali, many of them morphologically motivated. By analyzing the morpho-phonological processes of Mankiyali, we can better understand the structure of the language from both a diachronic and synchronic standpoint. Processes presented in this chapter include vowel elision, vowel harmony, and nasal assimilation.

4.1 Vowel Elision

Verb stems with the underlying shape of CVCVC exhibit predictable allomorphy depending on the form of the attached inflectional suffix. For instance, the Mankiyali verb stem for ‘pass’, *guzar-* (cf. Ur. *guzar-* ‘pass’) surfaces as either *guzar-* or *guzr-* depending on the form of the attached suffix. Consider the sentences in (1):

(1) CVCVC verbs stems followed by a consonant-initial suffix

a. *barak-ya* ‘has boiled’

<i>ča-z</i>	<i>barak-ya</i>
tea-ABS	boil-3.M.SG.PRS.PRF
‘the tea has boiled’	

b. *dayal-ve* ‘have given’

<i>mi</i>	<i>tu-z</i>	<i>kaayaz-a</i>	<i>dayal-ve</i>
1.SG.ERG	2.SG-ABS	paper-PL	give-PL.PRS.PRF
‘I have given you the papers’			

c. *guzar-ya* ‘has passed’

<i>veel-a</i>	<i>guzar-ya</i>
time-M.SG	pass-3.M.SG.PRS.PRF
‘the time has passed’	

As is evident from the three sentences in (1), underlying CVCVC verb stems (e.g., *barak-*

, *dayal-*, and *guzar-*) are unaffected when receiving a consonant-initial suffix. However, as shown in (2a-c), the final vowel of these stems is deleted in the surface form when an attached inflectional suffix begins with a vowel:

(2) CVCVC verbs stems followed by a vowel-initial suffix

a. *bark-aṅa* ‘to boil’

<i>hateka</i>	<i>saata</i>	<i>va</i>	<i>ča-z</i>	<i>bark-aṅa</i>	<i>keeru</i>
during	time	in.POST	tea-ABS	boil-INF	COND
‘The tea should boil during this time’					

b. *dayl-u* ‘have given’

<i>mi</i>	<i>mobile-∅</i>	<i>tu-z</i>	<i>dayl-u</i>
1.SG.ERG	phone-M.SG	2.SG-ABS	give-1.M.SG.PRS.PRF
‘I have given you the phone’			

c. *guzr-aṅa* ‘to pass’

<i>nevezi</i>	<i>aguli</i>	<i>guzr-aṅa</i>	<i>šu</i>	<i>na-u</i>
worshipper.OBL	in front of.POST	pass-INF (cf. Ur. <i>guzar-na</i>)	good	NEG-COP.M
‘to pass in front of a worshipper is not good’				

If a verb stem does not follow the pattern CVCVC, elision never takes place, regardless of the makeup of the attached suffix, as illustrated by the sentences in (3):

(3) No vowel elision

a. *kaar-ya* ‘has cooked’

<i>ma</i>	<i>lotaar</i>	<i>kaar-ya</i>
1.SG.NOM	curry	cook-1.M.SG.PRS.PRF
‘I have cooked the curry’		

b. *kaar-a* ‘am cooking’

<i>ma</i>	<i>lotaar</i>	<i>kaar-a</i>
1.SG.NOM	curry	cook-1.M.SG.PRS.PRG
‘I am cooking the curry’		

c. *aloor-ya* ‘have kneaded’

<i>ma</i>	<i>pit^ha</i>	<i>aloor-ya</i>
1.SG.NOM	flour	knead-1.M.SG.PRS.PRF
‘I have kneaded the dough’		

d. *aloor-u* ‘am kneading’

<i>ma</i>	<i>pit^ha</i>	<i>aloor-a</i>
1.SG.NOM	flour	knead-1.M.SG.PRS.PRG
‘I am kneading the dough’		

The impetus for vowel elision in the verb stems in (2) can be explained by the phonological rule in (4). The rule states that the stem-final vowel of a CVCVC stem is deleted when a suffix beginning in a vowel is attached to the stem. Thus, we can say that these verb stems exist underlyingly as CVCVC, and the vowel is deleted when vowel-initial affixes are attached. Fb

(4) CVCVC- → CVCC-/_ + -V

Another example of vowel elision occurs when multiple syllables – the first of which necessarily beginning with a vowel – are affixed to a C₀VCVC word stem ending in a liquid. Motivation for such a deletion may have to do with a lack of stress on the deleted vowel. The examples in (5) show that the elision takes place with multiple vowel and suffix combinations.

(5) Vowel elision in C₀VCVliquid- word stems

a. *uzal* → *uzl*

<i>uzal-a</i>	→	<i>uzl-oot-a</i>
white-M.SG	→	white-DIM-M.SG
‘white’	→	‘whiteish’ (MS1)

b. *bakar* → *bakr*

<i>bakar-a</i>	→	<i>bakr-oot-a</i>
billy_goat-M.SG	→	billy_goat-DIM-M.SG
‘billy goat’	→	‘young billy goat’

c. šukɪl → šukl

<i>šukɪl-a</i>	→	<i>šukl-ɪyaar-∅</i>
dry-M.SG	→	dry-make-IMP.SG
‘dry’	→	‘(you) dry it’

d. suɣal → suɣl

<i>suɣal-i</i>	→	<i>suɣl-ɪyaar-∅</i>
easy-F.SG	→	easy-make-IMP.SG
‘easy’	→	‘make it easy’

4.2 Vowel Harmony

For a certain class of disyllabic feminine singular nouns that possess a final long vowel in Mankiyali, the typical method of pluralization is ablaut, where the final long vowel of the noun is changed from a back vowel (indicating the singular form) to a front vowel (indicating the plural form). This is evinced by the example for ‘bee’ in (6a) below. This pattern is the norm for this type of feminine noun in Mankiyali. The change in the final long vowel indicates the grammatical shift from singular to plural, and the initial vowel has no bearing on this shift.

(6) Ablaut in feminine nouns with a final long vowel

<i>mažoor</i>	→	<i>mažiir</i>
bee.F.SG	→	bee.F.PL
‘bee’	→	‘bees’

However, when the initial vowel is [+high] (i.e. /i/ or /u/), a process of regressive assimilation takes place, such that the initial vowel harmonizes with the [+high] final long vowel in its relative backness and roundedness in both the singular and plural forms. The following rule explicates this phonological process involved:

(7) $V_{[+HIGH]} \rightarrow [\alpha\text{-ROUND}, \alpha\text{-BACK}] / _ CVV_{[\alpha\text{-ROUND}, \alpha\text{-BACK}, +HIGH]} C.$

This phenomenon is illustrated by the examples in (8).

(8) Vowel harmony in feminine nouns with a final long vowel

a.

<i>ku.cuur</i> ⁴	→	<i>ki.ciir</i>
female_dog.F.SG	→	female_dog.F.PL
‘dog’	→	‘dogs’

b.

<i>tukuur</i>	→	<i>tikiir</i>
bucket.F.SG	→	bucket.F.PL
‘bucket’	→	‘buckets’

c.

<i>kukuur</i>	→	<i>kikiir</i>
hen.F.SG	→	hen.F.PL
‘hen’	→	‘hens’

Moreover, note in (9) that [-high] vowels that coincide in the singular form are not necessarily examples of vowel harmony. Whereas the initial vowel and the final long vowel in ‘house cricket’ and ‘chisel’ coincidentally have the same tongue position in the singular form, there is a lack of harmony in the plural form. This indicates that vowel harmony in this class of nouns only takes place when both vowels are [+high].

(9) Lack of vowel harmony for [-high] initial vowels

a.

<i>cacaal</i>	→	<i>cacul</i>
house cricket.F.SG	→	house cricket.F.PL
‘house cricket’	→	‘house crickets’

⁴ Compare *kucur-a* ‘dog-M.SG’ which implies the underlying vowel in the first syllable is *u*

b.

<i>sataar</i>	→	<i>satır</i>
chisel.F.SG	→	chisels.F.PL
‘chisel’	→	‘chisels’

4.3 Homorganic Nasal Assimilation

Homorganic nasal assimilation is one of the most common types of assimilation cross-linguistically. In Mankiyali, sequences of [nasal]+[stop] and [nasal]+[affricate], in which the nasal consonant undergoes place assimilation, are prevalent in word-medial and word-final position, as demonstrated in (10):

(10) Homorganic nasal assimilation

<i>šempuu</i>	‘shampoo’ (cf. eng. <i>šæmpu</i>)
<i>čamba</i>	‘ploughing tool’
<i>amb</i>	‘mango’
<i>gıntii</i>	‘hoe’
<i>dandura</i>	‘sickle’
<i>hınd</i>	‘winter’
<i>panc</i>	‘five’
<i>kaaᅇᅇa</i>	‘thorn’
<i>kaᅇᅇura</i>	‘temple (anatomical)’
<i>kuᅇᅇii</i>	‘key’
<i>grıᅇᅇja</i>	‘yoke’
<i>tıᅇᅇk</i>	‘wood stove’
<i>diᅇᅇgooᅇa</i>	‘cucumber’
<i>zaᅇᅇga</i>	‘leg’

Thus, we see nasals preceding bilabial consonants surfacing as the bilabial nasal, [m] (e.g., -mb-); nasals preceding alveolar (or dental) consonants surfacing as the alveolar/dental nasal, [n] (e.g., -nc- and -nd-); nasals preceding retroflex consonants surfacing as [ᅇ] (e.g. -ᅇᅇ-); nasals preceding postalveolar consonants surfacing as the postalveolar [ᅇ] (e.g. -ᅇᅇ-), and nasals preceding velar consonants surfacing as the velar [ᅇ] (e.g. -ᅇᅇ-).

CHAPTER 5

PROSODIC PHENOMENA

This chapter looks at two prosodic phenomena that take place in many of the world's languages: minimal word constraints and word stress. We begin with an exploration of minimal word constraints in Mankiyali in 5.1 and turn to a detailed analysis of the stress pattern in 5.2.

5.1 Minimal Word Constraints

In many languages, minimal word constraints require the size of a prosodic content word to satisfy a minimum threshold of weight. It is important to note that minimal word constraints are only applicable for prosodic content words and not to all words in general for a language. This means that most often, neither function words (e.g., pronouns, adpositions, numerals, etc.) nor phonologically dependent content words (i.e., clitics) are subject to minimal word constraints (Gordon 2006:48). In other words, minimal word constraints by and large only apply to prosodically independent words that are also content words.

Moreover, while the most typical minimal word constraint is CVC (Gordon 2006), the minimum size requirement for prosodic content words varies cross-linguistically. For instance, English adopts CVC as its minimum word constraint (e.g., *hit* is acceptable but **hi* is illicit) (Morén 1997), but in the aboriginal language of Yidj, prosodic content words must be at least disyllabic ($\sigma\sigma$) (e.g. *digir* 'nose' is acceptable but **dir* is impermissible) (Gordon 2006; Ryan 2019). Furthermore, in the Salishan language of Nuxalk, prosodic content words need not contain a vowel as long as they have at least two consonants (e.g., *sx* 'bad', but not **s*) (Topinzi 2010; Ryan 2019).

Based on research into cross-linguistic minimal word constraints, several linguists have proposed implicational weight hierarchies for prosodic content words (Garrett 1999, Gordon &

Applebaum 2010, Ryan 2019). These hierarchies, summarized in (1), claim that if a language permits a certain word type as prosodic content word, every syllable type that outranks that word type in the hierarchy will also be permissible, barring other factors (e.g., preclusion of coda consonants in a language).

- (1) $\sigma\sigma > CVV > CVC > CV > V > CC > C$

Turning to examine minimal word constraints in Mankiyali then, we find that the language follows this hierarchical proposal. Prosodic content words must be at least CV in size, but they can also surface as CVC, CVV, and disyllabic ($\sigma\sigma$) as demonstrated by the examples in (2):

- (2) Minimal Word Types in Mankiyali

V:	<i>i</i>	‘he (PROX.ERG)’
	<i>a</i>	‘and’
	<i>-u</i>	COP.M
C(C)V:	<i>so</i>	‘he sleeps’
	<i>šu</i>	‘good’
	<i>po</i>	‘soil’
	<i>sve</i>	‘ashes’
(C)VC:	<i>ɪʏ</i>	‘come (IMP)’
	<i>car</i>	‘sparrow’
	<i>dil</i>	‘heart’
	<i>p^hik</i>	‘tasteless’
CVV:	<i>kĩĩ</i>	‘insect’
	<i>šee</i>	‘porcupine’
	<i>mãã</i>	‘January’
	<i>kaa</i>	‘grass’
$\sigma\sigma$:	<i>pili</i>	‘ant’
	<i>muža</i>	‘rat’
	<i>mažoor</i>	‘bee’
	<i>zaŋga</i>	‘legs’

Also, notice in (2) that even though prosodic content words never appear as a single short vowel without an onset or coda (/V/), function words and prosodically dependent content words can appear as a single short vowel (e.g., ‘he’, ‘and’, and the copula clitic). This is consistent with

the fact that minimal word constraints do not apply to these types of words but only to prosodic content words.

5.2 Word Stress

5.2.1 Primary Stress

Primary stress placement in Mankiyali is sensitive to both syllable weight and the position of the syllable in a word. Geminates do not appear in native Mankiyali words and therefore do not impact stress assignment. Likewise, syllable onset complexity does not influence stress. Contrastive tone exists in Mankiyali (as briefly outlined in section 2.3), but the interaction between tone and stress are not explored in this thesis. To avoid the distortion of the present analysis of Mankiyali's word stress pattern, no words that exhibit tone have been included in this section.

About 87% of weight-sensitive languages recognize a binary distinction in syllable weight (Gordon 2006), distinguishing syllables with long vowels from syllables with short vowels. However, several languages exist in which syllable weight is more complex than a simple binary distinction. (Kenstowicz 1996, Gordon 2002a, Munshi & Crowhurst 2012, Ryan 2019). Not only does Mankiyali's stress criterion distinguish long vowels from short vowels, but it also distinguishes short, open syllables, V, from short, closed syllables, VC(C). As a result, the stress criterion in (3) emerges. However, when all syllables of a word are equal in weight according to this scale, stress falls on the penultimate syllable.

(3) Mankiyali stress criterion: $VVC(C), VV > VC(C) > V$

It is important to note that all syllables with long vowels, VV and VVC, receive some form of stress in Mankiyali (either primary or secondary). For example, both syllables in *daa.xiil* 'entrance' and *bããs.rii* 'flute' are stressed. However, native speaker judgement varied

considerably as to where primary stress fell in both VV.VVC and VVC.VV words.

Consequently, I keep words of this type out of the present analysis and leave it to future research to determine the relationship between VVC and VV syllables for stress placement.

In addition, only two words have been found that contain both VCC and VC syllables: *'gand.az* ‘garbage (ACC)’ and *kar. 'sang* ‘a huge heap’. *kar. 'sang* is a compound word (cf. Ur. *garh* ‘jumble’ and nlm. *sang* ‘together’), and the VCC syllable in *'gand.az* appears in the default stress position for Mankiyali (the penultimate syllable). Consequently, neither word reveals whether or not VCC outweighs VC in the Mankiyali stress criterion, so more data is needed to determine the relationship between these two syllable types.

The placement of stress in words comprised of syllables of equal weight, as shown in (4), indicates that the default stress location is the penultimate syllable. The conventional IPA symbol ' before a syllable denotes the location of primary stress.

(4) Stress in words comprised of syllables with equal weight

a. Primary stress location in words with V strings

<i>'a.za</i>	‘above’
<i>'bu.ti</i>	‘all’
<i>'ji.ga</i>	‘tall’
<i>ca. 'ma.ri</i>	‘animal skins’
<i>ha. 't'o.ra</i>	‘hammer’
<i>ku. 'cu.ra</i>	‘dog’
<i>a.ni. 'gu.gu</i>	‘owls’
<i>ka.ma. 'ka.la</i>	‘stupid’
<i>ja.vi. 'da.ni</i>	‘Javid (OBL.GEN.PL)’

b. Primary stress location in words with VC strings

<i>'gul.yoz</i>	‘grain’
<i>'lak^h.ser</i>	‘many’
<i>jan. 'dar.yoz</i>	‘locks’

c. Primary stress location in words with VV(C) strings

'bãã.yĩĩ	'rooster'
'saa.tʰii	'companion'
'ɖaa.kii	'postman'
'kaa.rɪɪ	'millet'
'zaan.daak	'child'

However, while the examples in (4a-c) demonstrate that primary stress prefers to fall on the penultimate syllable in Mankiyali, the tendency for stress to fall on the penultimate syllable will be interrupted if syllables with different levels of weight are present. Specifically, the heaviest syllable in a word always attracts primary stress regardless of its location in the word or the morpheme in which it appears. If multiple syllables in a word tie for the heaviest syllable, primary stress falls on the rightmost of those syllables that is not word-final.

When syllables of varying weight are present within a word, Mankiyali's primary stress criterion becomes clear. As shown in (5a), VC attracts primary stress over its open counterpart, V. When two or more VC syllables are present in a word, like in (5b), primary stress falls on the rightmost syllable that is not word-final. However, notice in (5c) that if only one VC is present, even if in word-final position, stress will shift to VC to avoid falling on V. This indicates that, while stress prefers to avoid word-final position, a heavy syllable can overrule this preference, thereby drawing stress to the final syllable.

(5) Primary stress on VC syllables

a. VC attracting primary stress from V

'pʰar.za	'tomorrow'
'kur.ta	'shirt'
ma. 'çʰɪr	'mosquito'
ba. 'ʃan.da	'rain'
tʰi. 'lɪr.yo	'elders (ERG)'
'bol.bo.la	'nightingales'
'zaŋ.ga.la	'forests'
'ʰal.pʰe.ra	'turning point for oxen when ploughing'
so. 'mun.da.ra	'seas'

- b. Primary stress position with multiple VCs in a word

<i>'gul.yoz</i>	‘grain’
<i>'lak^h.ser</i>	‘many’
<i>ʃan. 'dar.yoz</i>	‘locks’
<i>mil. 'yan.di.yi</i>	‘from lightning’

- c. Primary stress on VC in word-final position

<i>pu. 'čaz</i>	‘son (ACC)’
<i>zo.ra. 'var</i>	‘forceful person’
<i>pro.p^{he}. 'sar</i>	‘professor’ (cf. eng. <i>prəfɛsər</i>)

Like VC, VCC also draws stress from V, as illustrated in (6a).

- (6) Stress on VCC

- a. VCC attracting primary stress from V

<i>'baŋg.su.va</i>	‘buckle’
<i>ba. 'taŋg</i>	‘pear’

Thus far we have seen that VC(C) is a more preferential stress peak than V for primary stress. But, when a VV(C) syllable is present in a word, stress will be drawn from both VC(C) and V syllables, as demonstrated from the examples in (7a). When two or more VV(C) syllables are present in a word, like in (7b), stress will land on the rightmost syllable that is not word-final. If VV(C) appears word-finally and is the heaviest available syllable, stress will shift to the final syllable, as in (7c).

- (7) Primary stress on VV(C) syllables

- a. VV(C) attracting primary stress from VC(C) and V

<i>'pii.li</i>	‘yellow’
<i>'raa.ya</i>	‘night’
<i>'boo.ɖaz</i>	‘board’
<i>ʃal. 'bii.la</i>	‘grain strainers’
<i>'kaa.ya.za</i>	‘papers’
<i>ɦa. 'taa.lu.ʒa</i>	‘weed grown among crops’
<i>luŋ. 'gee.ɾi.na</i>	‘fox (OBL.GEN.SG)’
<i>kam.zo. 'rii</i>	‘weakness’
<i>'xaa.pi.ra.ka</i>	‘bats’

<i>luŋ. 'gaar</i>	'fox'
<i>zid. 'naak</i>	'stubborn man'
<i>sang. 'toob</i>	'friendship'
<i>'zaan.da.ka</i>	'children'
<i>aŋg. 'raa.ra</i>	'type of weed'
<i>gand. 'gii</i>	'dirtiness' (cf. Ur. <i>gandgi</i>)
<i>zind. 'gii</i>	'life'
<i>'paar.sang</i>	'ladder'

b. Primary stress position with multiple VV(C)s in a word

<i>'dee, kii</i>	'postman'
<i>'xaa, lii</i>	'Saturday'
<i>baa. 'lee.ŋa</i>	'of air'
<i>kaa. 'lee.za</i>	'liver'
<i>pee. 'ŋii.ŋi</i>	'of water'

c. Primary stress on VV(C) in word-final position

<i>ma. 'sĩĩ</i>	'fly'
<i>muk. 'lee</i>	'open (IMP)'
<i>ka.mak. 'lii</i>	'stupidity'
<i>kuŋ.ku. 'rai</i>	'dove'
<i>pa.ro. 'zããd</i>	'lunch time'
<i>a.ram. 'daar</i>	'comfort'

Summarizing the pattern of primary stress placement in Mankiyali then, we see that the penultimate syllable functions as the default position for primary stress in polysyllabic words with equally weighted syllables, as seen in the examples in (4) above. But, based on the stress criterion presented in (3), the heaviest syllable in a word will attract stress from the default position, even if word-final. If there are multiple syllables within a word that tie for the heaviest syllable, primary stress will fall on the rightmost nonfinal occurrence. This indicates the tendency for stress to avoid the final syllable, but that preference is overruled if the final syllable is also the heaviest syllable, as indicated in the examples in (5c) and (7c) above.

5.2.2 Secondary Stress

We now shift our discussion to secondary stress. Note that the results in this section are

preliminary and further research is required to confirm the findings.

Once primary stress is determined, secondary stress is assigned to all remaining VV(C) syllables. Syllables with short vowels, V(C)(C), will not receive secondary stress except to avoid a stress lapse (two adjacent unstressed syllables). The weight criterion for secondary stress in Mankiyali can be represented by the scale in (8).

(8) Mankiyali secondary stress criterion: VV(C) > V(C)(C)

As is evident, the primary stress scale from (3) above differs from the proposed secondary stress scale in (8) in the distinctions it makes. A difference in weight scales of this kind between primary and secondary stress is unusual. Examples in (9) illustrate the assignment of secondary stress in Mankiyali. The IPA symbol ̣ indicates the location of secondary stress.

(9) Secondary stress in Mankiyali

a. Secondary stress on VV(C) syllables

<i>'dee. kii</i>	'postman'
<i>kaa. 'lee.za</i>	'liver'
<i>'paa. nii</i>	'water'
<i>'ũũṭh. yaan</i>	'female camel'
<i>'zaan. daak</i>	'child'

b. Lack of secondary stress on V(C)(C) syllables

<i>'a.za</i>	'above'
<i>ca. 'ma.ri</i>	'skins'
<i>'gul.yoz</i>	'grain'
<i>jan. 'dar.yoz</i>	'locks'
<i>ba. 'šan.da</i>	'rain'
<i>yal. 'bu.la</i>	'grain strainers'

c. Secondary stress on V(C)(C) syllables to avoid stress lapse

<i>fi.a. 'taa.lu. ža</i>	'weed grown among crops'
<i>'laas.le. yal</i>	'smooth'
<i>do.kan. 'daar</i>	'shopkeeper'
<i>ši.ta. 'nii</i>	'naughtiness'
<i>'xaapi. raka</i>	'bats'

As shown by the examples in (9a), every syllable with a long vowel that does not receive primary stress will be assigned secondary stress. Additionally, the examples in (9b) indicate that syllables with short vowels do not automatically receive secondary stress. However, notice in (9c) that short vowel syllables are compelled to receive secondary stress if leaving them unstressed would result in a stress lapse (two adjacent unstressed syllables).

CHAPTER 6

CONCLUSION

The phonological typology of Mankiyali is relatively similar to its areal counterparts. Both the consonantal and vocalic inventories are normative in size and structure. While the inventory of fricatives is significantly larger than many Indo-Aryan languages, other languages in the region that have also been heavily influenced by Persian possess similar systems (e.g., Palula, Khowar, and Kalasha). Phonotactic constraints employed in the language are also quite typical of many areal languages. Not much literature is available on minimal word constraints of the languages of the region, so comparing Mankiyali's minimal requirement of CV with other languages is difficult without a thorough comparative analysis. Furthermore, the general model for Indo-Aryan stress patterns is similar to that of Mankiyali (especially with respect to secondary stress). Location of Primary stress varies to some degree from language to language it seems (e.g., in Kashmiri, primary stress always falls on the word-initial syllable irrespective of weight (see Munshi & Crowhurst 2012). Finally, contrastive lexical tone is a vibrant characteristic for many Northwest Indo-Aryan languages (Baart 2014), and Mankiyali is similar in this respect.

This thesis represents the first attempt to describe Mankiyali's phonological system and has taken several steps toward characterizing the language's phonological features. Nevertheless, there are several areas that solicit future research. Specifically, the account of Mankiyali's stress pattern presented in this work relied solely on a rhythmic analysis of stress placement. A detailed acoustic assessment of the phonetic correlates of stress would certainly augment the work done here. Finally, as briefly touched upon in section 2.3, tone is contrastive in Mankiyali, but a detailed investigation of the tonal system is required. Ideally, an in-depth inquiry into the

interaction between tone and stress in Mankiyali will be undertaken at some point in the future.

APPENDIX A
TRANSCRIPTION KEY

The following table provides a list of transcription symbols used in this thesis along with their IPA equivalents:

Symbol	IPA	Description
<i>Vowels</i>		
i	i	High front unrounded vowel (short)
ii	i:	High front unrounded vowel (long)
u	u	High back rounded vowel (short)
uu	u:	High back rounded vowel (long)
ɪ	ɪ	High front unrounded lax vowel (short)
ɪɪ	ɪ:	High front unrounded lax vowel (short)
e	e	Mid front unrounded vowel (short)
ee	e:	Mid front unrounded vowel (long)
o	o	Mid back rounded vowel (short)
oo	o:	Mid back rounded vowel (long)
a	a	Low central unrounded vowel (short)
aa	a:	Low central unrounded vowel (long)
ə	ə	Mid central vowel (short)
əə	ə:	Mid central vowel (long)
ɨ	ɨ	High central unrounded vowel (short)
ɨɨ	ɨ:	High central unrounded vowel (long)
ɔ	ɔ	Low-mid back rounded vowel (short)
Ṽ	Ṽ	Nasal vowel (V stands for any vowel)
<i>Stops</i>		
p	p	Voiceless bilabial stop (unaspirated)
p ^h	p ^h	Voiceless bilabial stop (aspirated)
b	b	Voiced bilabial stop (unaspirated)
b ^h	b ^h	Voiced bilabial stop (aspirated)
t	t̚	Voiceless dental stop (unaspirated)
t ^h	t̚ ^h	Voiceless dental stop (aspirated)
d	d̚	Voiced dental stop (unaspirated)

Symbol	IPA	Description
t̚	t̚	Voiceless retroflex stop (unaspirated)
t̚ ^h	t̚ ^h	Voiceless retroflex stop (aspirated)
d̚	d̚	Voiced retroflex stop (unaspirated)
k	k	Voiceless velar stop (unaspirated)
k ^h	k ^h	Voiceless velar stop (aspirated)
g	g	Voiced velar stop (unaspirated)
q	q	Voiceless uvular stop (unaspirated)
<i>Affricates</i>		
c	ts̺	Voiceless alveolar affricate (unaspirated)
č	tʃ̺	Voiceless post-alveolar affricate (unaspirated)
č ^h	tʃ̺ ^h	Voiceless post-alveolar affricate (aspirated)
ǰ	dʒ̺	Voiced post-alveolar affricate (unaspirated)
<i>Fricatives</i>		
f	f	Voiceless labio-dental fricative
s	s	Voiceless alveolar fricative
z	z	Voiced alveolar fricative
š	ʃ̺	Voiceless post-alveolar fricative
ž	ʒ̺	Voiced post-alveolar fricative
x	x	Voiceless velar fricative
ɣ	ɣ	Voiced velar fricative
ɦ	ɦ	Voiced glottal fricative
<i>Nasals</i>		
m	m	Bilabial nasal
n	n	Alveolar nasal
ɳ	ɳ	Retroflex nasal
<i>Approximants and Flaps</i>		
r	r	Alveolar flap
ɽ	ɽ	Retroflex flap
l	l	Lateral approximant/liquid
v	v	Labio-dental approximant

Symbol	IPA	Description
y	j	Palatal approximant
<i>Stress</i>		
'	'	Primary stress
ˈ	ˈ	Secondary stress
<i>Tone</i>		
	˘	Tone
		V stands for any vowel.

APPENDIX B

MAPS



Map B.1: Map of the Khyber Pakhtunkhwa Province of Pakistan.



Map B.2: Map of the Mansehra District of Khyber Pakhtunkhwa Province.



Map B.3: Map of Danna and Dameka in Mansehra District; the two villages where Mankiyali is primarily spoken.

APPENDIX C
SYMBOLS AND ABBREVIATIONS

1	first person
2	second person
3	third person
ABS	absolutive
COND	conditional
COP	copula
DIM	diminutive
DIST	distant
eng.	English
ERG	ergative
F	feminine
GEN	genitive
hno.	Hazara Hindko
IMP	imperative
INF	infinitive
M	masculine
NEG	negation
nlm.	Mankiyali
NMLZ	nominalization
NOM	nominative
OBL	oblique
POST	postposition
PL	plural

PRF perfect
PROX proximate
PRS present
PST past
QU question/wh-marking
SG singular
skr. Saraiki
Ur. Urdu
VIS visible

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