

Affective coronal alternations in Mapudungun: Sound symbolism, change and morpho-phonological structure

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Abstract

This paper examines a series of consonantal alternations conveying ‘affective’ meanings in the South American language Mapudungun (Catrileo 1986, 2010, 2022). The processes target the rich four-place coronal inventory of the language by shifting consonants in root morphemes to palatal or dental articulations. The palatalisations are crosslinguistically common in implying small size, tenderness, closeness and politeness (e.g. [nazki] ‘cat’ → [ɲafki] ‘kitty’), however, the effects of dentalisation are more unexpected, implying distance, abruptness, sarcasm and rudeness (e.g. [nazki] ‘cat’ → [ɲaθki] ‘damned cat’). While speakers evidently seem to assign sound symbolic value to the alternations, the patterns do not align neatly with cross-linguistically expected ‘synaesthetic’ correspondences, particularly to do with size symbolism and acoustic frequency (Ohala 1984, 1994). Based on historical metalinguistic commentary and corpus data, I argue that the Mapudungun alternations are long-established in the language, showing a variety of lexicalised forms, and being deeply grammatically entrenched both in their semantico-pragmatic implications and their morpho-phonological structure. As such, any sound-symbolic patterns are fundamentally subordinate to the grammatical architecture. I propose that a more parsimonious analysis of the patterns is an autosegmental one, where floating evaluative morphemes (diminutives and augmentatives) spread [DISTRIBUTED] and [ANTERIOR] feature nodes to the target coronal consonants, along with their language-specific pragmatics.

1 Introduction

Sound symbolism, as a series of “systematic associations between sounds and meanings” (Kawahara 2020: 2), encompasses a multiplicity of phenomena ranging from the imitative, to the shape-representational, to the emotionally evocative. These have a basis in *iconicity*, that is, in “the resemblance-based mapping between aspects of form and meaning” (Dingemanse et al. 2015: 604). However, the degree of integration of these iconic elements of speech into the grammatical system varies widely. Indeed, in some languages sound symbolism is limited to a subset of explicitly imitative or onomatopoetic words, or to a skew in the lexical frequency of certain sounds in lexical categories. In other languages, however, sound symbolism may be more deeply integrated into the grammar, being a prominent part of the evaluative morphology (e.g. iconic diminutives and augmentatives in Fungwa, cf. Akinbo 2021) or constituting larger word categories (e.g. West-African ideophones, cf. Dingemanse 2023). The nature of these interfaces between iconicity and grammar is, furthermore, of some importance to linguistic theory, as it straddles the fundamental question of limitations on arbitrariness in linguistic forms. It is also an interesting question for historical (and evolutionary) linguists, as it suggests a diachronic pathway from purely iconic sounds into abstract units integrated into grammatical systems (Cuskley & Kirby 2013).

Here our focus is on Mapudungun (ARN, isolate, Chile/Argentina) a language reported to have consonantal alternations that are driven by ‘affective’ or ‘stylistic’ factors which seem to belie sound-symbolic origins. The most explicit account of the phenomenon relates to alternations among coronal consonants, as described by linguist and native Mapudungun speaker María Catrileo (1986, 2010, 2022). According to this work, “the expression of affective values in Mapudungun takes place via sound alternations, while in other languages, like Spanish, they are predominantly effected through morpho-syntactic resources” (1986: 12).¹

In Catrileo’s work (and elsewhere, see §2 and §3 below), we find that, where a coronal consonant shows an alternant which is palatal, this has a diminutive meaning, most often with a positive or endearing connotation, as in (1a–b). This link between palatals (or high vowels) and diminution/positive affect is well-attested crosslinguistically (Sapir 1915, 1929, Nichols 1971, Alderete & Kochetov 2017) and tends to be linked to sound symbolic processes (in particular to Ohala’s [1984, 1994] so-called ‘Frequency Code’, see §5, below). More typologically unexpected is the opposite trend, where Mapudungun coronal consonants may be dentalised, such that the dental alternant gains an augmentative meaning, which most often carries with it a rude or pejorative connotation, as in (1c–d).²

- (1) a. [lamɲen] → [ɭamɲɛɲ]
 ‘sister’ ‘(lovely) little sister’
- b. [nazki] → [ɲafki]
 ‘cat’ ‘(lovely) kitty’
- c. [lamɲen] → [ɭamɲɛɲ]
 ‘sister’ ‘(horrible/damned) sister’
- d. [nazki] → [ɲaθki]
 ‘cat’ ‘(horrible/damned) cat’

In this paper, I examine the pattern of ‘affective alternations’ found in contemporary Mapudungun, as well as its attestation in the 400-year textual record for the language. Throughout, I survey metalinguistic commentary as well as corpus data (see 3, for details), taking a ‘shared reading’ approach.³ This entails the examination of key material in collaboration with Central Mapudungun speaker and traditional educator (*Kimelfe*) Fresia Loncon Antileo, who has provided guidance and intuitions throughout. On this basis, I go on to propose a diachronic trajectory for the phenomenon, arguing that the evidence points to the longstanding productivity of the alternations, alongside a pattern of occasional lexicalisation and morphologisation into the present-day language. I further consider the theoretical status of the alternations both in terms of featural geometry and morphological representations. I suggest that the alternation is best characterised as the result of floating evaluative morphemes (cf. Akinbo 2021,

¹“la expresión de valores de tipo afectivo, en mapudungun, se realiza mediante la fluctuación de sonidos, mientras que en otras lenguas, como el español por ejemplo, se efectúan predominantemente con recursos morfosintácticos.” NB: throughout, translations from Spanish, French and Latin are my own.

²For the purposes of the alternations studied in this paper, we take post-alveolars [ʃ] and [tʃ] to fall into the same category as ‘true’ palatals [ɭ], [ɲ] and [j]. It is also evident that the affricate [tʃ] represents the palatal counterpart of the coronal stops and the retroflex affricate [ʈʂ].

³For a more detailed account of ‘shared reading’ as a method for exploring historical linguistic materials for minoritised languages, see Molineaux & Loncon (2024).

among others) that share the active feature [DISTRIBUTED] and are internally distinguished by the feature [ANTERIOR] highlighting their positive or negative polarity. I argue that while the diminutive/affective forms show a clear sound-symbolic pattern (in line with the ‘Frequency Code’), the augmentative/pejorative can only be said to do so in a narrow, highly phonologically and morphologically entrenched sense.

2 Mapudungun ‘stylistic/expressive’ consonant alternations

Mapudungun has a long descriptive tradition highlighting apparently ‘unconditioned’ phonological alternations (see §3 for details). Indeed, a number of researchers (Key 1976, 1979, Key & Clairis 1976, Martinet 1983, Clairis 1991, Salas 1992, Zúñiga 2006) characterise this as ‘phoneme fluctuation’, that is ‘the possibility of freely alternating two or more phonemes within the same unit of meaning, under the same circumstances, though only in certain lexical items’ (Clairis 1991: 19).⁴ Nevertheless, at least for a subset of the alluded alternations — the coronal consonants — there is now wider consensus that these convey an ‘affective value’ (Salas 1992, Zúñiga 2006, Hernández et al. 2006, Cañumil 2011), directly contradicting the idea that they are context-independent. Indeed, we will argue that these alternations are semantically and pragmatically governed and may even be modelled as morphological processes (see §6.2, below).

In this section, we provide some background on the language and its speakers (2.1) and then move on to survey the system of coronal consonants in the language (§2.2). This done, we provide a meta-analysis of the literature on the present-day patterns of dentalisation and palatalisation which are claimed to trigger Mapudungun speakers’ ‘affective’ readings of words and utterances (§2.3).

2.1 The language and its speakers

Mapudungun (ARN, mapu1245) is the endangered, heritage language of the Mapuche people, with their traditional homeland in the Southern Cone; what is today south-central Chile and Argentina. At the time of first contact with the Spanish Empire (1536), an estimated one million people would have spoken the language, mostly to the west of the Andes (Bengoa 2000: 14). Today, optimistic estimates place the number of speakers at around 200,000 (Zúñiga & Olate 2017) in Chile and 8,400 in Argentina (INEC 2005), with varying degrees of competence. Transmission, furthermore, is in steep decline (Gundermann et al. 2011) with only weak support available through formal education (Loncon 2017).

While database sources like Ethnologue (Eberhard et al. 2024) and Glottolog (Hammarström et al. 2024) tend to treat Mapudungun as part of a small language family (‘Mapudungu’ and ‘Araucanian’, respectively), most specialists regard the language as an isolate (cf. Adelaar & Pache 2023). The proposed sister language for Mapudungun, Huilliche, may be better conceived of as a moribund dialect, with most differences resulting from advanced attrition (Sadovsky et al. 2015). For the region, the language is well-documented, with sources beginning

⁴“la positilité pour la même locuteur, dans les mêmes circonstances, de faire alterner librement deux ou plus de deux phonèmes dans la même unité significative, et cela seulement pour certaines unités du lexique.” See Molineaux (submitted) for a more in-depth critique of the concept.

in the colonial period and a number of recent grammars and specialist papers available on various aspects of its linguistic structure. In such works the language may also be termed *Mapuche*, *Chedungun* or *Araucanian*, the latter now a rejected exonym.

2.2 Coronal consonants in Mapudungun

The consonantal inventory of Mapudungun displays a wide range of place contrasts among coronals. In Table 1 we see the repertoire for one of the more vital varieties: the Lafkenche dialect of Central Mapudungun.⁵

Table 1: Central Mapudungun consonant inventory, based on Sadowsky et al. (2013)

	Labial	Dental	Alveolar	Retroflex	Postalveolar/ Palatal	Velar
Stop/affricate	p	t̪	t	ʈʂ	tʃ	k
Fricative	f	θ	s	ʐ	ʃ	
Nasal	m	n̪	n		ɲ	ŋ
Lateral		l̪	l		ʎ	
Approximant	w				j	ɥ

It is worth noting that the typologically uncommon dental-alveolar contrast of Mapudungun⁶ is well established in vital dialects today and in the historical record (Molineaux 2022). Alveolar and dental places of articulation also have different gestures associated to the active articulator, with the former being apical and the latter, laminal, such that these are often characterised as *inter-dental*. The contrast can be instantiated, furthermore, in a small number of minimal and near-minimal pairs, as seen in Table 2.⁷

Table 2: (Near-)minimal dental-alveolar pairs (from Painequeo et al. 2018 and Augusta 1916)

Stops	Nasals	Laterals	Fricatives
[t̪ən] ‘head louse’	[pu.n̪] ‘night’	[ki.l̪a] ‘bamboo’	[θa.kel] ‘pact/agreement’
[tən] ‘high sound’	[pu.n] ‘I arrived’	[ki.la] ‘three’	[sa.ku] ‘sack’ (<Spa.‘saco’)

Overall, the place contrasts among Mapudungun coronals are fairly symmetrical (or ‘economic’ in the sense of Clements 2003), with matching manners of articulation for most places. The main exception are retroflexes, where nasal and lateral phones show up only as allophones assimilating to other retroflex consonants (Echeverría 1964, but see Sadowsky et al. 2013). Among fricatives, /s/ is a fairly rare. A recent newcomer to the language, it appears mostly

⁵Contra Sadowsky et al. (2013), here I have conflated postalveolar and palatal places of articulation. I also treat /ɥ/ as a glide rather than as the fricative /y/, which it is often realised as.

⁶At the time of consultation, among the 2,100 languages in the PHOIBLE database (Moran & McCloy 2019), only 8.9% of languages contrasted dentals and alveolars among stops, 7.8% among nasals, 4.1% among laterals, and 2.9% among fricatives.

⁷For fricatives, only near-minimal pairs may be found, since the alveolar sibilant (/s/) is mostly restricted to borrowings from Spanish and Quechuan.

in borrowings from Spanish and Quechuan (see Molineaux 2022 for an overview), often in alternation with /θ/, /z/, /tʃ/ or /ʃ/, as exemplified in (2).

- (2) a. /laθu/ < Sp. /laso/ ‘rope’
 b. /tʃumpiru/ < Sp. /sombbrero/ ‘hat’
 c. /izpaθa/ < Sp. /espaða/ ‘sword’
 d. /manʃu/ < Sp. /manso/ ‘tame’

The phonemic status of [ʃ] is also somewhat problematic, since it tends to appear either in place of borrowed /s/ or as a variant of /θ/ or /z/, with a positive affect associated to it. Given that in a number of words speakers perceive /ʃ/ as underived, despite likely having a non-/ʃ/ etymon (see Table 3), we consider it to be part of the phonemic inventory.⁸

Table 3: Likely etymological sources for lexicalised /ʃ/ words

Word	gloss	Etymon	gloss
wɛʃ-wɛʃ	‘crazy/naughty’	wɛzɑ	‘bad’
aɬuʃ	‘(nice and) warm’	aɬuθ	‘warm’
azɔʃ	‘rice’	aros	‘rice’ (Spanish)
ufiʃa	‘sheep’	oβɛʃa	‘sheep’ (Colonial Spanish)
miʃki	‘honey/sweet’	misk’i	‘honey/sweet’ (Southern Quechua)

2.3 Coronal alternations in Mapudungun

Catrileo’s (1986, 2010) key insight regarding ‘stylistic’ variation in Mapudungun is that, by replacing one segment with another, speakers make direct links between their language and the extralinguistic context. These kinds of shifts disrupt expectations, producing clear pragmatic effects: ‘a position of linguistic politeness can be marked as emotional, contemptuous or sarcastic when it is pronounced in a manner that differs from the usually accepted patterns for the occasion’ (2010: 51). Key examples for her Central Mapudungun dialect are provided in Table 4, focusing on words with ‘neutral’ alveolar and retroflex consonants.⁹ Throughout this section, our account provides a meta-analysis of Catrileo and other scholars’ published claims and examples, which were checked with our consultant for insights and grammatical intuitions.

The overall pattern, schematised in Table 5, can be summarised as one where, when alveolars and retroflexes are palatalised, they express tenderness, small size, pleasure or politeness. The same segments, when dentalised, express rudeness, indifference, sarcasm or distaste. The process seems to target words from left to right, with initial coronals being consistently affected (cf. [t͡ʃɛwa] → [tʃɛwa]) and later coronals being more variable (cf. [tuntɛn]

⁸For a further discussion, see Viegas Barros (1999: 7-8 fn.9).

⁹In the case of palatalised stops, Catrileo gives [t͡ʃ], a transcriptional equivalent of IPA [c], which is claimed to alternate with [tʃ]. Here, I give only the affricate transcription. Note that the glosses attempt a single lexical or phrasal equivalent within the range of possible contextual interpretations of the stylistic/affective form. The tables are organised to highlight the different manners of articulation (in bold), though often all coronals are affected.

Table 4: Affective alternations in Catrileo 1986, 2010: Alveolars and retroflexes

Neutral	gloss	Affected	gloss
tunten	'how much?'	tʃuntʃeɲ tʃuntɛn	'how much, please?' 'how much, already!?'
fejti tati	'yes, that's it'	fejʃi tʃatʃi fejʃi tati	'please believe me, that's it' 'that's it, don't ask again!'
siʎo	'partridge'	ʃiʎo θiʎo	'little/lovely partridge' 'annoying partridge'
siʎɲaw	'wild radish'	ʃiʎɲaw θiʎɲaw	'yummy wild radish' 'yucky wild radish'
nɪlan	'I did not grab'	nɪlan nɪʎan	'please, believe me, I did not grab' 'I did not grab (how dare you suggest it)'
nɪʃzam	'conversation'	nɪʃzam nɪʃam	'a nice chat' 'to have words'
lifkɪlej	'it is clean'	ʎifkɪlej ʎifkɪleji	'it's really nice and clean' 'it's clean, for what it's worth'
ʃɛwa	'dog'	ʃɛwa tɛwa	'doggy' 'unpleasant dog'
ʃɪpape	'let them out!'	ʃɪpape tɪpape	'let the poor souls out' 'let them out, if you must'
ʃamtun	'question'	ʃamtun θamtun	'nice question' 'darned question'
miʒke	'toasted flour'	miʃke miθke	'yummy toasted flour' 'yucky toasted flour'

→ [tʃuntʃeɲ] ~ [tʃuntɛn]). In the absence of an initial coronal, a later coronal in the root morpheme tends to undergo the affective process (cf. [miʒke] → [miʃke], see §6 below for details).

Table 5: Affective alternations based on neutral alveolar and retroflex consonants

Negative	Neutral	Positive
t̪	t ʃ	ʃ
θ	s ʒ	ʃ
n̪	n	ɲ
l̪	l	ʎ

Catrileo (1986, 2010) describes the palatalised forms as typical of children or child-directed speech, as well as showing up in the speech of the elderly and in elderly-directed speech. This is a well-recognised semantic pattern for diminutives (Dressler & Merlini Barbaresi 1994, Jurafsky 1996, Ponsonnet 2018a). The same pattern, however, does not hold for dentalisation, which does not index any age group. Of particular interest are more extreme forms of the palatalised fricative which result in the approximant [j], a feature found predominantly in child or child-directed speech. Examples are [ʃamtun] for 'wee/nice question' or [miʃke] for 'yummy

toasted flour’.

In parallel to the association with child language, the palatalised forms are also frequently linked to referents of a smaller relative size, in what may be termed an iconic or synaesthetic relationship (see Hinton et al. 1994: 2 and §5 below). The same does not seem to hold for the dentalisation pattern, which is not explicitly linked to large referents, despite this often being a feature of markers of pejoration or negative affect (Sapir 1911, Silverstein 1994: 45-46, however see Ponsonnet 2018a and §4 below).

While Catrileo (1986, 2010) reports that these stylistic alternations are productive in Central Mapudungun dialects and, to an extent, in the Mountain dialects (*Pewenche*), there are a number of alternants of individual lexical sets which, though identifiable phonologically are less semantically transparent. A few cases of these can be found in (3), as elicited from our consultant, Fresia Loncon.¹⁰

- (3) a. [nimin] ‘smell’ ~ [ɲimɲɲ] ‘aroma’ ~ [ɲimɲɲ] ‘stench’
 b. [inin] ‘keep water in one’s mouth’ ~ [ɲɲɲɲ] ‘delicious’ ~ [ɲɲɲɲ] ‘disgusting’
 c. [kotʃi] ‘salty/sour’ ~ [kotʃi] ‘sweet’
 d. [tʃafoj] ‘break’ ~ [tʃafoj] ‘cough’
 e. [fita] ‘big/old/wise’ ~ [fiʃa] ‘big thing’ ~ [fiʃa] ‘big person’ ~ [fiʃa] ‘husband (big/stern)’

In other items, no alternation is evident, yet the target root has either a dental with negative connotations or a palatal with positive/diminutive connotations. These are evidenced in Table 6, and, as argued in §6.3, likely represent instances of the lexicalisation of erstwhile affective alternations. There are, however, a substantial number of roots that have dentals or palatals without having any obvious affective connotations, past or present, as shown in Table 7.

Table 6: Non-alternating, affective items

	Negative connotation		Positive/small connotation
weθa	‘bad’	ʃetʃi	‘dwarf/gnome’
aʃa	‘bad/perverse’	pitʃi	‘small/wee’
kaɭku	‘wizard’	ʌufu	‘newborn’
ɲape	‘slow/lazy’	ɲapa	‘beloved friend/sister’

Crucially, words that have dental or palatal consonants as their base form, are also potential targets for the kinds of affective processes described by Catrileo (1986, 2010). On the one hand, palatals can be dentalised and dentals can be palatalised, producing the expected affective outcomes (negative and positive connotations, respectively), as evidenced in Table 8.

The case of pejorative dentalisation for underlying dentals and positive/diminutive palatalisation for underlying palatals is less straightforward, since the phonological correlate of the semantic/pragmatic shift coincides with the neutral form. For some speakers, the result may

¹⁰The case of [inin] and its alternants comes from Painequeo et al. (2018) and Augusta (1916); that of [fita] and its alternants is from Zúñiga (2006: 341, fn. xii), and Zúñiga & Suter (2007).

Table 7: Non-affect-bearing items containing roots with dental and palatal consonants

Dental		Palatal	
θiŋu-	‘speak’	paʃiŋka	‘bronze’
ʈue	‘earth/ground’	kaʃu	‘grass’
paʈu	‘paternal aunt’	ʈʃaʈa	‘pot’
wiŋ	‘mouth’	iwiŋ	‘grease/fat’

Table 8: Affective palatalisation of dentals and dentalisation of palatals in Catrileo 1986, 2010

Neutral	gloss	Affected	gloss
θewmalen (~sewmalen)	‘prepare this for me’	ʃewmalen	‘Please, prepare this for me’
θomo (~somo)	‘woman’	ʃomo	‘kind/lovely woman’
ʈiŋkilej	‘They are calm’	ʃiŋkilej	‘They are nice and calm’
ŋamunʈuj	‘they go on foot’	ŋamunʈu	‘they go on foot, poor things’
ʈimiŋe	‘swallow!’	ʃimiŋe	‘swallow for me, please’
ʈʃalin	‘greeting’	ʈʃalin	‘unpleasant greeting’
ʈʃem	‘what thing’	ʈem	‘what unpleasant thing’
ʈʃe	‘person’	ʈe	‘unpleasant person’
ŋom	‘tame’	ŋom	‘unpleasantly tame’
aʈkituen	‘listen to me’	aʈkituen	‘for the last time, listen to me’

be seen as a ‘double making’ of place features (see Table 9). Indeed, Catrileo (2010) claims that the pejorative or negative affect form surfaces with an ‘emphatic dental’. Interestingly, this claim is absent from Catrileo (1986) and is not reported elsewhere. A more deliberate, hyperarticulated form of the affective form, however, does not seem altogether unlikely, and our consultant, Fresia Loncon Antileo was able to produce these, which, anecdotally, have a longer closure and greater apical protrusion (marked as ‘half long’ [·] in Table 9).¹¹ In the case of palatals, positive affect seems to also rely on a more emphatic form in the affricates. Here Catrileo (1986, 2010, 2022) reports that the affricate becomes a full post-alveolar stop (IPA [ç], but [t·] in her transcription). The nasal and the lateral are, surprisingly, reported to become alveolar, i.e. [n] and [l] in Catrileo (2010), but not in Catrileo (1986). For the palatal fricative, no data is provided, probably due to the rarity of this sound outside of the context of affective palatalisation. Again, our consultant was able to produce the alternating palatal forms, but considered both cases to be unnatural, which ultimately argues for these alternations being less regular than those where an actual change in place features is predicted. The patterns of affective alternations in palatals and dentals is summarised in Table 10.

Where no coronals are available to undergo these affective processes, speakers use lexical resources to similar ends. In the case of diminution or positive affect the adjective [piʈji] is quite frequent, allowing, according to our consultant, for a sarcastic interpretation when dentalised, as in [piʈi waka] ‘pesky little cow’. For negative affect, forms of the adjective [weθa] ‘bad’

¹¹This observation is likely in line with the well-attested pattern of both segmental and supra-segmental elements playing a role in the production of sound-symbolic effects (see Dingemans et al. 2016).

Table 9: ‘Emphatic’ affect in dentals and palatals according to Catrileo 2010

Neutral	gloss	Affected	gloss
t̪iŋkilej	‘They are calm’	t̪̥iŋkilej	‘They are annoyingly calm’
ɲamuɲtuj	‘they go on foot’	ɲ̥amuɲ̥tuj	‘they go on foot, foolishly’
l̪imiŋe	‘swallow!’	l̪̥imiŋe	‘I command you to swallow’
t̪̥alin	‘greeting’	çalin	‘pleasant greeting’
t̪̥em	‘what thing’	çem	‘what little thing’
t̪̥e	‘person’	çe	‘cherished person’
ɲom	‘tame’	ɲom	‘lovely and tame’
aɫkituen	‘listen to me’	alkituen	‘please listen to me’

Table 10: Affective alternations based on neutral palatal and dental consonants

Negative affect	Neutral affect	Positive affect
t̪̥ ?	t̪	t̪̥
?	θ	ʃ
ɲ̥ ?	ɲ	ɲ
l̪̥ ?	l̪	ɫ
t̪	t̪̥	ç ?
ɲ	ɲ	n ?
l̪	ɫ	l ?

are often used, as in [weθa paɲi] ‘bad mountain lion’ or, attenuated to [weʃa jeku] ‘naughty/silly crow’.¹²

While the most detailed description of these ‘stylistic’ shifts is given in Catrileo’s work, contemporary linguistic descriptions tend to acknowledge the existence of affective changes, with greater or lesser degree of exemplification (cf. Suárez 1959, Erize 1960, Moesbach 1962, Croese 1980, Salas 1992, Zúñiga 2006, Hernández et al. 2006, Cañumil 2011). Generally, the palatalising changes are more conspicuous and are the subject of explicit discussion. Dentalisations are often overlooked, which may be the result of their misperception by non-native researchers or the general attrition of the contrasts in some dialects (see Molineaux 2022). A case of this particular scenario is Smeets’ (2008: 30–35) grammar, where her main consultant, Luis Quinchavil — a Central Mapudungun speaker —, was able to recognise all dental-alveolar distinctions but only produced them consistently for fricatives. As a result, Smeets gives extensive exemplification of palatalisation alternations and of dentalisation only in the fricatives, claiming that the obstruents, nasals and laterals do not show a clear dental-alveolar opposition.

For speakers in the Argentinian province of Chubut, Díaz-Fernández (2007) observes a similar, though more restrictive pattern of alternations than those proposed by Catrileo (1986,

¹²Occasionally, morphological means may convey similar semantic or pragmatic effects. We see this with diminutive suffix [-iɫ/] in §4.1 and with the ineffectual suffix [-piθa] in §4.3.

2010). While the palatalisation patterns are almost identical, the dentalisation was observed only for oral obstruents ($/\text{tʃ}/ \rightarrow /t̪/$ and $/z/ \rightarrow /ð/$). Interestingly, here the palatalisation process is claimed to have been expanded beyond coronals to labio-dental $/f/$, at least in one item ([kɔfke] ‘bread’ v. [kɔʃke] ‘lovely/little bread’), and to velar $/ŋ/$ in another item ([fantɛŋ(e)i] ‘it’s this size’ v. [fantɛɲi] ‘it’s this wee size’).¹³ Díaz-Fernández does comment, however, on the difficulties of eliciting these forms as a non-native researcher, especially considering that she takes these to be “weak and unstable structures, such that there are closely-related and rather mobile synchronic strata in which diachronic residues and innovative tendencies compete”(2007: 6).¹⁴ Given this picture of variation in the contemporary dialects, we turn to the diachronic evidence in order to help elucidate the existing patterns.

3 Reconstructing consonant alternations in the historical record

Following Villena (2017), the textual record for Mapudungun can be split into four major periods, as in Figure 1. In the upcoming sections we examine the data for the Missionary and Ethnographic periods, since the Pre-Textual data is mostly onomastic and too sparse, and we have already examined much of what would fall under the Institutional Period. The data in what follows is gathered through searches both in the published, tagged version of the *Corpus of Historical Mapudungun* (CHM – Molineaux & Karaiskos 2021) and in the untagged texts available through its source page (Molineaux 2024, see also Molineaux 2023).

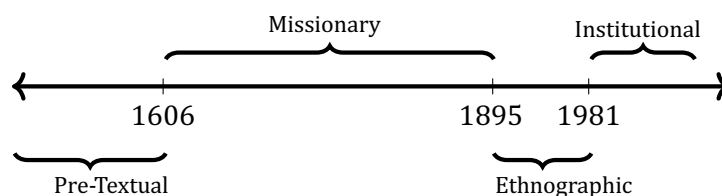


Figure 1: Mapudungun textual production periods according to Villena 2017

3.1 Coronal alternations in the Missionary Period

3.1.1 The turn of the 17th century (Valdivia 1606, 1621)

The earliest surviving Mapudungun materials are the work of a Spanish Jesuit, Father Luys de Valdivia (1560 –1642). His grammar (1606) — based mostly on Northern Mapudungun sources — describes a recognisable coronal inventory (see Table 11).

Compared to the present day (see Table 1), the main difference with Valdivia’s inventory are (a) the voicing of fricatives, (b) the apparent absence of the $/s/$ and $/ʃ/$ phonemes and (c)

¹³The case of [fantɛɲi] might not be a case of affective alternation at all, but rather the coalescence of the vowels [ei] into [i] and sporadic palatalisation before high-front vowels (see §6.2 below).

¹⁴“estamos frente a estructuras débiles e inestables, a modo de un espesor sincrónico de estratos interrelacionados y más o menos móviles, en el cual se enfrentan residuos diacrónicos y tendencias innovadoras”.

Table 11: Consonant inventory for late-16c Northern Mapudungun, based on Valdivia (1606)

	Labial	Dental	Alveolar	Retroflex	Postalveolar/ Palatal	Velar
Stop/affricate	p		t̪/t	t̠	t͡ʃ	k
Fricative	v	ð	(s)	ʒ	(ʒ)	
Nasal	m	ɲ	n		ɲ	ŋ
Lateral		l̪	l		ʎ	
Approximant	w				j	ɥ

the lack of discernible contrast between dental and alveolar stops.¹⁵ Difference (a) is expected, since to this day, the voicing of fricatives remains a major isogloss separating northern and mountain dialects from Central Mapudungun (Croese 1980, Molineaux 2022). Regarding (b), the /s/ and /ʃ/ phonemes are still evidently incipient. In both Valdivia’s grammar and *Sermons* (1621), all <s> forms we find are transparently of Quechuan (e.g. *suysuy* ‘collinder’; *misky* ‘honey/sweet’)¹⁶ or Spanish (e.g. *ispada* ‘sword’; *Dios* ‘God’) origin. As for /ʃ/, or its voiced counterpart, /ʒ/, there is no straightforward spelling to represent it, based on 16c Spanish (or Latin). There are a couple of instances of <z>, however, that may represent the relevant sound in words of Quechuan origin, such as <pozco> ‘yeast’ and <mizky> ‘honey’.¹⁷ Interestingly, however, in items where we would expect affective palatalisation of /z/ or /ð/, we find spellings with <y>, particularly for the interjection <cuye> or <cuy>, used as an exhortation by women towards other women. We assume this is a palatalised form of /kuʒe/ ‘wife’,¹⁸ probably representing the gliding form /j/.

As regards the stops (difference c), it is worth saying that a distinction between the Mapudungun alveolar and the dental was not observed until the late 19th century. This selective ‘deafness’ was likely the result of the overlapping properties of the two Mapuche stops *vis-a-vis* the Spanish one. Indeed, already at the turn of the 17th century, coronal stops in Spanish were probably (post)dentals (Penny 2002: Section 2), thus sharing the dentality of the Mapudungun (inter)dental stops and the apicality of the Mapudungun alveolars. To this we add the fact that minimal pairs are rare and the dental phoneme has a very low lexical incidence overall today (see Molineaux 2022: 663). The result is that the distinction probably fell under the radar for grammarians. I believe this scenario is far more likely than that of a later split

¹⁵I also take the retroflex stop to lack the affrication of contemporary dialects, as argued in Molineaux (2021: 33 fn.10 and 2022: 665). The proposed IPA transcriptions here and elsewhere are based on my own interpretation of the authors’ stated spelling practices. For Valdivia, in particular, a more detailed analysis can be found in Molineaux (2021), for Febrés, see Molineaux & Loncon (2024).

¹⁶Another 17c example of /s/ in Quechuan borrowings is the word for ‘glass’, *kespi* which shows up as <kispi> in a Mapudungu-Latin vocabulary compiled by Dutch explorers (Herckmans 1642) and based on the southernmost dialect, *Huilliche*.

¹⁷Here, it is unclear whether the proposed palatal is etymological or the result of an active process of palatalisation, since different possible source languages within the Quechuan family would have had palatalised variants, and a similar process of affective palatalisation has been described for some of them (de Reuse 1986, Halm 2020).

¹⁸At this stage, we conjecture that the word probably had a more general meaning of ‘grown/adult woman’, since both affective forms [kuʒe] and [kuθe] today refer to an older woman (positively or negatively) more than her marital status. The lexical shift to ‘wife’ was likely the result of co-occurrence and potentially contact with Spanish where *mujer* can have both the meaning ‘wife’ and ‘woman’, in a possessive construction.

between dental and alveolar stops, given the lack of a unifying environment for such a change.

While Valdivia (1606) provides no metalinguistic commentary on coronal alternations, we do note that there is a strong tendency for the use of explicitly palatal spellings (<ñ, ch, ll> for /ɲ, tʃ, ʎ/) in words with inherently positive connotations or which show affective alternation today, and explicitly dental spellings (<d, n', ld/l'> for /ð, ɲ, ʎ/) for words with negative connotations or affective alternations today, as can be seen in Table 12.¹⁹ In particular for the dental nasals and laterals, the spelling evidence shows inconsistency, very often lacking the diacritic or diagraphic marking that distinguishes them from the corresponding alveolar.²⁰

Table 12: Sample items with dental and palatal consonants in Valdivia 1606, 1621

Dental			Palatal		
<code>	[koðe]	'stupid'	<pchi>	[ptʃi]	'small'
<huedon>	[weðon]	'wound the head'	<cachomin>	[katʃomin]	'pacify'
<ùden>	[iðen]	'despise'	<ñochi>	[ɲotʃi]	'a bit'
<l'an>	[ʎan]	'death'	<llallin>	[ʎaʎin]	'skinny'
<huedùduam>	[weʎiðuam]	'cruel'	<yall>	[jaʎ]	'child/offspring'
<lduquin>	[ʎukip]	'dirty'	<lladqmin>	[ʎadkmin]	'pity someone'
<n'otumin>	[ɲotumin]	'act stubbornly'	<ñomcien>	[ɲomklen]	'quiet'
<n'oigen>	[ɲoiɲen]	'be pugnacious'	<ñuque>	[ɲuke]	'mother'

It is also worth noting a few scattered instances of alternations found by contrasting forms across Valdivia's *Grammar* and *Sermons*, as in Table 13. These appear to match the expected pattern, despite no explicit treatment in the text and variably transparent semantics.

Table 13: Sample items with dental and palatal variants in Valdivia 1606, 1621

Alternat A			Alternant B		
a. <pozko>	[pozko]	'yeast'	<pudku>	[puðku]	'yeast'
b. <lduquin>	[ʎukip]	'dirty'	<lluquingetupe>	[ʎukinetupe]	'they will be soiled'
c. <yullin>	[juʎin]? [ʎuʎin]?	'bee'	<dullin>	[ðuʎin]	'bee'
d. <ùlcha>	[iʎtʃa]	'married woman'	<ùllcha>	[iʎtʃa]	'maiden'
e. <vùta>	[vita]? [viʎta]?	'big/old/husband'	<vùcha>	[viʎtʃa]	'big/old'
f. <cure>	[kuzɛ]	'married woman'	<cude>	[kuðe]	'old woman'
g. <huera>	[weʎa]	'bad'	<huedalay>	[weðalay]	'they are not bad'

Despite the sparsity of the data, it seems that there is good reason to believe that a form of the affectively-governed alternations was already present in the earliest records for Mapudungun. Particularly instructive is the alternation of the words for 'bad' (Table 13g). Valdivia's *Vocabulary* (appended to his grammar) lists the word as <huera>, and this is the form that shows up 69 times in the *Sermons*. The alternative, dental form <hueda-> shows up only in two negative forms in the same text (<huedalay> 'they are not bad' and <huedalayay> 'they will not be bad'). Crucially, the inherent root semantics of the item has very obvious negative

¹⁹According to Augusta's dictionary (1916), [weluθuamin] means 'to be distracted, mindless, confused'.

²⁰The only two items that are spelled often and consistently as dentals are the verbal stem [ʎa-] 'die' and the adverb [aʎi] 'too much', which argues for the salience of the dental in contexts of negative affect and augmentation.

connotations, so the forms with <d> appear to double mark this negativity. The long term result, we propose, is that the repeated emphatic marking of negativity of the form led to greater and greater proportions of dentals being used, ultimately replacing the original neutral form. Indeed, today speakers no longer use /weza/, but /weθa/ (see Sadowsky et al. 2019), and even /wefa/, meaning ‘naughty, mischievous’. Similar cases where we find evidence for a historically neutral consonant replaced today by an ‘affected’ one can be found in Table 14, which we suggest are the lexicalisation of the affect-marked items.²¹

Table 14: ‘Neutral’ consonants in Valdivia (1606, 1621) v. present-day ‘affected’ consonants

<wera>	‘bad’	>	[weθa] (never [weza])
<por>	‘dirty’	>	[poθ] (never [poz])
<coilla>	‘lie’	>	[koj̥la] ([koj̥la] as ‘affective’)
<calcu>	‘wizard/witch’	>	[kḁku] (never [kalku])

Beyond this pattern of lexicalisation of affective forms, this earliest stage does not seem to suggest a situation that differs radically from what we find in the present-day data. Indeed, palatals and dentals appear to be used in affectively neutral contexts as well,²² such as those in Table 15, just as they are today (see Table 7, above).

Table 15: Affect-neutral dentals and palatals in Valdivia (1606, 1621) and their 20th-century reflexes (Augusta 1916)

<peld>	[pe̥]	>	[pe̥]	‘neck’	<aylla>	[aj̥la]	>	[aj̥la]	‘nine’
<qlduy>	[k̥luj]	>	[k̥i̥wi]	‘(dried) beans’	<willi>	[wi̥li]	>	[wi̥li]	‘north’
<keun’>	[kew̥i̥ŋ]	>	[kew̥i̥ŋ]	‘tongue’	<dañe>	[dape]	>	[dape]	‘nest’
<ven’>	[ven̥]	>	[fi̥ŋ]	‘flesh’	<dñin>	[ð̥ni̥n]	>	[θ̥i̥ni̥n]	‘eyebrows’
<ad>	[að]	>	[aθ]	‘face’	<chiway>	[t̥ji̥waj]	>	[t̥ji̥waj]	‘mist’
<úddum>	[i̥ðum]	>	[i̥θim]	‘gums’	<kechu>	[ket̥ju]	>	[ket̥ju]	‘five’

3.1.2 The 18th century (Febrés 1765, Havestadt 1777)

Two grammars of Mapudungun, with a variety of accompanying texts, were published by Jesuit priests in the 18c. The first, penned in Spanish by Andrés Febrés (1734–1790), a Catalan, is explicit in its metalinguistic commentary on coronal alternations:

“the Indians [sic] tend to turn some letters into others... the *t* [t] and the *th* [t̥] into *ch* [t̥] primarily to speak lovingly, *vochùm*, in place of *votùm* – the son... the *n* [n] into *ñ* [ɲ] quite often, as is the case of the *l* [l] into *ll* [ʎ], e.g. *ñagh*, for *nagh* – below: *llamgen* for *lamgen* – the sister: the *r* [r] into *d* [ð] and further into the *ja*, *jo*, *ju* of

²¹Also noteworthy is the change in the form for ‘wizard/witch’—now dental—, which is likely to have changed its meaning in the context of Christianisation. Indeed, Valdivia explicitly rails against <pu calcu> ‘witches/wizards’ in his Sermons, calling them *deceivers* and *devil worshippers*.

²²Barring the palatal fricatives, which—at least partially— seem to emerge as a result of diminutive palatalisation, and the dental stops, which were not recorded until the late 19th century.

Catalan or *gia* of Italian or *ge, gi* of French [ʒ], to speak affectedly, which sounds a bit like *s*, as in *duca, juca*, for *ruca* – the house: *cujam*, for *curam* – egg” (1765: 6, IPA characters inserted).²³

The second grammarian was Bernard Havestad (1714–1781), a Westphalian, who produced his description in Latin. Similar to Febrés, he claims a range of affective and stylistic effects of consonant alternations:

“The Chilean Tongue takes license to replace one letter for another, to create diminutives, express love, affect and tenderness, because they care about the elegance of words, the veneration of speech and the fame of eloquence, or even at the discretion and choice of each. Therefore the following are synonymous... *cal* [kal], *call* [kaʎ]; wool: *lamûen* [lamuɛn], *llamûen* [ʎamuɛn]; sister: *Chili* [tʃili], *Chilli* [tʃili]; Chile: *colù* [kolì], *collù* [kolì]; bright red; *moGeli* [moɲeli], *moGelli* [moɲeli]; if I live: *ruca* [zuka], *duca* [ðuka], *suca* [zuka]; house: *huera* [weɟa], *hueda* [weða], *huesa* [weɟa]; bad: *carù* [kazì], *cadù* [kaðì], *casù* [kazì]; green, raw : *anùn* [anìn], *añun* [aɲìn]; I sit: *ùñm* [iɲm], *ùnm* [inm]; bird” (1777: 8).²⁴

The majority of the alternations described by Febrés and Havestadt regard palatalisation and positive affect or diminution. This is particularly explicit in Havestadt, who claims letters are often replaced by others that are ‘more gentle, soft, tender’ (1777: 135) in order to create *diminutives* as in <fo**ch**um> for <fo**t**um> ‘sonny’; <qui**s**ulen> for <qui**d**ule> ‘I am alone’; <si**u**> for <ri**u**> ‘goldfinch’,²⁵ very much implying a sound-symbolic association.

Febrés also exemplifies the use of palatalisation as a mitigation strategy, in the transcript of a conversation between two Mapuche chiefs, one is made to say ‘I don’t come here to tell you (little) lies’, where ‘lies’ shows up as <co**y**lla> [kojʎa] (4) instead of present-day [kojʎa]. The palatalisation, we claim, represents a politeness and mitigation strategy that our present-day consultant recognised as being very productive in her own speech and which is also a cross-linguistically common trait of diminutives (cf. Ponsonnet 2018a for a recent survey).

(4) Palatalisation as mitigation in Febrés (1765)²⁶

²³“Suelen los Indios mudar algunas letras en otras ... la *t* y la *th* en *ch* principalmente para hablar cariñoso, *cochùm*, por *votùm* – el hijo ... la *n* en *ñ*, y esto muchas veces, como tambien la *l* en *ll*, v.g. *ñagh*, por *nagh* – abaxo: *llamgen* por *lamgen* – la hermana: la *r* en *d* y más en el *ja, jo, ju* Catalan, ò *gia* Italiano, ò *ge, gi* Francés, para hablar melindroso, que se parece algo à la *s*, como *duca, juca*, por *ruca* – la casa: *cujam*, por *curam* – huevo.” The IPA transcriptions here, as in other historical materials, are based on our analysis of the authors’ own explanations of their spelling choices.

²⁴“Sumit sibi Lingua Chilensis licentiam usurpandi unam litream pro alia; idque i. ut formet Diminutiva V. n 273. 2dò ad significandum affectum amoris, bladas &c. 292. 3tiò. quia aucupantur verborum concinnitatem, orationis cultum, famamque eloquentia... Hinc sunt synonyma: *cal, call*; lana: *lamûen, llamûen*; soror: *Chili, Chilli*; Regnum Chilense: *colù, collù*; color heluus ravus; *moGeli, moGelli*; si vivam: *ruca, duca, suca*; domus: *huera, hueda, huesa*; malus, a, um: *carù, cadù, casù*; viridis, crudus: *anùn, añun*; sedeo: *ùñm, ùnm*; avis.”

²⁵We assume here that <s> most likely represents a palatal form: [ʒ] or [ʃ].

²⁶Glossing: TR: transitiviser; CIS: cislocative; HAB: habitual; NEG: negative; 1: first person; S: singular; A: agent; 2: second person; P: patient.

- a. *inche coyllatupaquelayu*
 intʃe kojʎa-tu-pa-ke-la-ju
 1s lie-TR-CIS-HAB-NEG-1s.A.2s.P

'I don't come here to tell you (little) lies'

Only among the fricatives are the dentals represented explicitly by Febrés and Havestadt, always using the grapheme <d>. Indeed, Havestadt mentions that speakers 'freely' say <pran>, <psan>, <pdan> and <pxan> for 'descend' (1777: 103).²⁷ However, the affective undertones become clear in Havestadt's word lists, where we are told 'it displeases older women to be called *cude* [kuðe]', while 'it pleases them to be called *cuse* [kuze]' (635).

As regards other manner segments, Febrés does mention the existence of words where <n> and <l> are pronounced by 'bringing the tip of the tongue onto the teeth'. However, he concludes that it is not worth transcribing this distinction since 'they use it in very few words, and their difference in sound is almost imperceptible without listening with particular care' (1765: 5).²⁸

The spelling evidence across both works, however, suggests some use of <ld> in places where we expect the dental lateral, such as <pùldù> for 'fly (insect)' and <aldù> for 'too much', matching /pɫi/ and /aɫi/ in present dialects. We further find cases of apparent 'deprecativ' dentalisation using the <ld> digraphs in Febrés' transcriptions. For instance, <pelde> appears alongside <pele> for 'mud' (today /peɫe/), and <malđutuuyumi> meaning 'touch yourself' is used in the Mapudungun *Confessionary* he includes in the work, implying a moral reproach in that context. No orthographic evidence is recoverable for the dental nasal (or, indeed for stops, which we assume were not described rather than not being present, as argued in §3.1.1).

In short, then, the missionary period²⁹ shows some evidence for the 'stylistic' alternations of the kind described for present day forms of the language, but the nature of the orthographic systems, as well as the narrow focus of the corpus materials makes it difficult to find clearer instances, particularly of the dental-pejoration cases. Furthermore, there is evidence for the lexicalisation of palatalised and dentalised forms in words with inherently diminutive/positive or deprecativ semantics.

3.2 Coronal alternations in the Ethnographic Period (1895–1981)

Influenced by the study of folk traditions in Europe and the emerging field of dialectology, from the late 19th century onward, the documentation of Mapudungun took on a more aca-

²⁷Note that Havestadt tells us that <x> represent the sound of Portuguese, so most likely a post-alveolar [ʃ].

²⁸"en algunas palabras pronuncian la l, y la n, arrimando la punta de la lengua a los dientes; pero es mejor omitir la molestia de ponerles virgulita encima, ù otra señal, porque lo usan en muy pocas palabras, y casi no se percibe su diferente sonido, sino atendiendo con particular cuidado."

²⁹Although a minor work and heavily reliant on Febrés' grammar, Lieutenant Colonel Federico Barbará (1828–1893) of the Argentinian army also composed a brief guide to the language, as spoken by the Mapuche of the pampas on the eastern side of the Andes (1879). In those materials we find instances of the key alternations, even when no comment is made on their affective implications: <fotùm> v. <fochum> 'son'; <chale> v. <challe> 'in-law'; <hueza> v. <huera> 'bad' (after Peninsular Spanish, <z> is used to represent [θ]). Again, evidence for dentalisation is rare outside of fricatives. Similarly, we see digraphic spellings that appear to represent [ʎ], as in <aldù> '(too) much' and <malzún> meaning 'dishonest/immodest touching'. The Abbé Molina's *Civil History of Chile* (1795) also comments on <r-s> alternations in the central dialects of Mapudungun.

demic approach (see Malvestitti 2012: 20–24 and Pozo 2018). Work in the field attempted to represent traditional culture and language, and as such gathered a more varied and nuanced corpus. In many of these cases, we know the names of the individuals who provided the exemplars, as well as a number of facts about their biographical, cultural and linguistic background. Advances in linguistic training also allowed for greater precision in the transcription of materials which were recorded as articulated by speakers rather than as instruments of Christian doctrine. These new materials allow us a closer look at the relationship between affect and pronunciation.

3.2.1 Ethnographic materials in *Ngulumapu* (western Mapuche territories)

The work of German-born linguist Rudolf Lenz (1863–1938), primarily in his *Estudios Araucanos* (1895-1897), set the stage for the ethnographic approach to Mapudungun. Having obtained his doctorate in Bonn in 1886, Lenz was trained in the latest phonetic transcription innovations and applied these to eliciting traditional texts from native speakers from an array of locations of the Chilean territories. Despite this, he only came to identify the full range of dentals after his main consultant, a *Pewenche* (Mountain Mapuche) man called *Kalfün*, explicitly helped him notice it. ‘Calvún, docile as ever, finally lifted his head at each *fen·t·e* [fɛ̃t̃ɛ], *mæt·e* [mæt̃ɛ], etc. in order to show me the tip of the tongue peaking between his teeth; he clearly distinguished by ear whether I repeated *n·[ɲ]* or *n[n]*, etc.’ (1897: 130).³⁰

Lenz, furthermore, acknowledges the use of consonantal alternations in ‘the language of affect’ and ‘to vary a bit the meaning’ in words such as <wed·a–wesa–wera> ([weða–wesa–weʒa]) ‘bad’ and <kure–kuye–kuzhe–kude> [kuʒɛ–kuje–kuʒɛ–kuðɛ] ‘wife/old woman’ (131). However, he also states that his published materials are insufficient for the purposes of a full study of the matter, since he has ‘not paid sufficient attention to the matter and perhaps involuntarily made uniform in the transcription what in the mouth of the mapuche was intentionally distinct’ (Lenz 1897: 130).³¹

Despite these caveats, we see a certain amount of consistency in the use of both palatal and dental forms, given the respective positive and negative connotations of the words they appear in. A sample of such words is given in tables 16 and 17.³²

Similar to Lenz, the Bavarian Franciscan priest Félix de Augusta (1860–1935), only comes to incorporate dental stops in his 1910 *Lecturas Araucanas*, at the behest of *Domingo Wenuñamko*, one of his Mapuche collaborators. Despite acknowledging the relevant palatal and dental alternations, Augusta provides no systematic analysis of their context in his trilogy of works on Mapudungun (1903, 1910, 1916). The main exception to this is the claim, in the second edition of his *Lecturas* (1934: 202) that the replacement of <r> with <d> ([ʒ] with [θ]) in the evidential suffix [-ʒke] (see §4.2, below) is a sign of anger, as in <wentrudkelle> ‘it is indeed a man (regretably)’ or <ɲekatudkellelai> ‘it is not this again (regretably)’. An opposite, pleasur-

³⁰Calvun, dócil como siempre, al fin levantó en cada *fen·t·e mæt·e* etc. la cabeza para mostrarme la punta de la lengua que se asomaba entre sus dientes; él distinguió claramente por el oído si yo repetía *n·* o *n*, etc.’

³¹El araucano usa sin duda diferentes articulaciones, no solo para el lenguaje del cariño, sino para variar un poco el valor significativo, como en *wed·a-wesa-wera*, *kure-kuye-kuzhe-kude*. Los materiales míos publicados hasta aquí no son suficientes, porque no me he fijado lo suficiente en el asunto y quizás involuntariamente he uniformado en la transcripción lo que en boca del indígena fue intencionalmente algo distinto.

³²Note that the term [ɲiʎaɲ] is often translated as a relationship of ‘affinity’, particularly referring to the ‘wife’s father/daughter’s husband and wife’s brother/sister’s husband, respectively’ (Course 2011: 88).

Table 16: Sample items with dental consonants in Lenz 1897

Dental		
<ɫ·ayaimi>	[ɫajajmi]	'you will die'
<koŋkəl·>	[koŋkəl]	'growl'
<fütt·a>v.<fütta>	[fi̯t̪:a]v.[fi̯t̪:a]	'husband/big'
<mətt·e weda>v.<mət̪te>,<wera>	[mət̪:e weθa] [mət̪:e] [weʒa]	'very bad'
<n'ümən'nei> v. <nümün>	[n̥imən̥nej]v.[nimin]	'it stinks' 'smell'
<met̪t·e pod̪nei>	[met̪:e poð̪nei]	'it is very dirty'
<fent·epun·>v.<fent'epun>	[fent̪epun̥]v.[fent̪ʒepun]	'(so) very much'
<kudü>v.<kurü>	[kuθ̪i]v.[kuz̪i]	'black'

Table 17: Sample items with palatal consonants in Lenz 1897

Palatal		
<shiwén>	[ʃiwen]	'companion'
<üşketu pamən>	[iʃketupamən]	'come rest'
<fücha>	[fi̯t̪ʃa]	'big'
<ɲiʎaɲ̃>	[ɲiʎaɲ̃]	'in-law'
<maʎ>	[maʎ]	'tame'
<ñochi>	[ɲot̪ʃi]	'softly/slowly'
<ʎam̃én>	[ʎam̃en]	'sister'
<ʎig>v.<lig>	[ʎiɰ]v.[liɰ]	'white'

able connotation is said to be attached to <shomoshkelle> 'it is indeed a woman (fortunately)', where both the initial /θ/ and suffixal /z/ of /θomoz̪keʎe/ 'it is indeed a woman' are palatalised.³³

The work of the first published Mapuche ethnographer, Manuel Manquilef (1911, 1914), brings together extremely authentic materials. However, his orthography is somewhat standardised, insofar as the allophonic variation is stripped away, lacking the explicitness of the non-native observer. This probably results from a standard language ideology modelled on Spanish. Hence we see that the word for 'bad' is always <weda> and not <wera>, as in earlier sources. We also see a clear division between <fücha> meaning 'old' and <füta> meaning 'big', possibly a partially lexicalised politeness or deference strategy relating to old age. While no immediately identifiable dentalisations can be found in Manquilef's work, we do find cases of palatalisation, as in the case of <zakiñ> [ʃakiɲ] glossed as 'love' or 'enjoyment' for what is elsewhere [zakɪɲ] 'thought'.

The most emblematic of the ethnographic texts is likely the autobiography of *Longko* (Chief *Paskual Koña* (late 1840s – 1927), transcribed by Wilhelm de Mösbach (1930), another Bavarian Franciscan. Although somewhat standardised in its spelling practices, we do see evid-

³³ A possible case of pejorative [t̪] might be in the word <te> which Augusta (1910: 155 fn.3) says has a 'peculiar sound', and is used to address different characters of a story in an accusatory fashion. Here we suggest this is simply a pejorative/dentalised form of [t̪e] 'person', as described by Catrileo (2022: 129).

ence for inherently affect-laden words having dentals and palatals, such as <l-an> [lan] ‘death’, <mën-a> [mən̩a] ‘much’, <pod> [pɔð]; ‘dirty’, <ñañai> [ɲaɲaj] ‘female salutation’, <misha> [miʃa] ‘companion’, <chachai> [tʃatʃaj] ‘daddy’. Occasionally, there are transparent relations between the affective form and other forms, as in the case of [zaki] ‘think, calculate’ and [faki] ‘respect, think highly of’, as in (5), where we see palatalisation as a form of deference.

(5) Palatalisation as deference in Coña (1930: 14)³⁴

- a. *Mētewe shakiñefui fillpëlle tēfachi mapu mew*
 mətewe faki-ŋe-fu-j fiɫ-pəɫe təfatʃi mapu mew
 much think-PASS-BI-3.IND all-near this land in
 ‘He was much respected by all in these parts’

A particularly revealing example of the unique status of dental elements in the speech of *Paskual Koña* is the contrast between the dental and alveolar lateral in the presumably onomatopoeic item <ful-> [ful] ‘thump’ (6 a–b) as compared to the related verbal root <ful-> ‘dump’ (6 c). Interestingly, the dental appears to be used in the transparently imitative form — which represents an abrupt or loud event —, while the alveolar shows up in the more conventionalised, lexical form. This pattern, we suggest, may hint at a divide in the sound inventory of the language, such that some segments are more prone to sound-symbolic associations (see also Antivero 2019), a pattern that would fall neatly in with known descriptions of ideophonic lexis (cf. Dingemanse 2023). In support of this possibility, consultation with Fresia Loncon reveals that this pattern seems to hold, where dental [ɫ] is more evocative of abruptness or coldness than [l], at least for some speakers of Mapudungun.

(6) Imitative and lexical forms in Coña (1930)³⁵

- a. *«ful-» pi ti karoti; naqi manshana pülli meu*
 ful pi-i ti karoti nau-i manʃana piɫi mew
 thump say-3.IND DET club down-3.IND apple ground in
 ‘«thump» says the club; the apples fall on the ground’
- b. *Neikufi; ful·ful· üi ñi naqn tēfachi manshana*
 nejku-fi fulful ij ji nau-n təfatʃi manʃana
 loosen-3P.3A.ind thump-REDUP sound.3.IND POSS-3S down-NLZ these apple
 ‘he loosens them; ‘thum-thump’ sounds the fall of these apples’
- c. *fulintëkuñekei kiñe epu külko fën manshana*
 ful-in-təku-ŋe-ke-j kiñe epu kilko fën manʃana
 dump-NLZ-place-PASS-HAB-3.IND one two basket fruit apple
 ‘some two baskets of apples were dumped in’

³⁴Glossing: TR: transitiviser; CIS: cislocative; HAB: habitual; NEG: negative; 1: first person; S: singular; A: agent; 2: second person; P: patient.

³⁵Glossing: REDUP: reduplication; POSS: possessive; NLZ: nominaliser; NEG: negative; 1: first person; S: singular; A: agent; 2: second person; P: patient.

In his grammatical sketch of Mapudungun, Moesbach (1962) also makes some interesting observations regarding diminutives and augmentatives. For the first, he harks back to Havestadt (§3.1.2) in claiming that, to create words analogue to Spanish ones with *-ito* (the diminutive), speakers “change a hard consonant into a soft one”(38), which he exemplifies with <fótəm> [fotəm] ‘son’ v. <fochəm> [foʃəm] ‘sonny’; <domo> [θomo] ‘woman’ v. <fomo> [ʃomo] ‘little woman’ and <duam> [θuam] ‘business’ v. <fuam> [ʃuam] ‘favour’. More surprising, however, is his suggestion of the suffix <-rke> [-zʰke] as a means to create augmentatives like those with Spanish <-azo>. His examples are <trewa> ‘dog’ v. <trewarke> ‘big dog’ and <üñəm> ‘bird’ v. <üñəmərke> ‘big bird’.³⁶ The reasons for this are less clear, but may relate to the mirativity of the suffix as well as its frequent alternation with the dental form <-dke> [-θke]. We will return to this question in §4.2, below.

3.2.2 Ethnographic materials in *Pwelmapu* (eastern Mapuche territories)

The historical evidence for Argentinian varieties of Mapudungun is sparser, however for the turn of the 20th century some clear data for alternations is available from the work of the German ethnographer Robert Lehmann-Nitsche. Only published by Malvestitti in 2012, his transcriptions of *Pwelmapu* materials span nearly three decades (1899–1826) and reflect a careful attempt at phonetic transcription which evidences substantial sub-phonemic alternations, including the kinds of affective phenomena we see to the west of the Andes, as shown in Table 18.

Table 18: Sample alternating forms in Lehmann-Nietsche’s texts Malvestitti 2012

Spelling	Sound	Elsewhere as	Gloss
<shayen>	[ʃajen]	[zajen]	‘flower’
<washkall>	[waʃkaʎ]	[waθa]+[kaʎ]	‘rattle (gourd+leather)’
<keshu>	[keʃu]	[kesu]	‘cheese’ <Spanish /keso/
<uäs’a, weda, weθa>	[wɛʃa, weða, weθa]	[weθa]	‘bad’
<t’okikelu>	[ʈokikelu]	[toki-ke-lu]	‘who is being a leader’
<met’e>	[meʃe]	[meʃe]	‘too much’
<kollü>	[koʎi]	[kolɪ]	‘tan’ (here a variety of horse)
<pullku>	[puʎku]	[pulku]	‘alcoholic drink’
<üllcha, ülcha>	[iʎʃa, iʎʃa]	[iʎʃa]	‘maiden, heavenly maiden’
<t’al’ka>	[ʈalka]	[ʃalka]	‘rifle’
<mochi>	[moʃi]	[moʃi]	‘(nice and) fat’
<lamñen>	[lamɲen]	[lamɲen]	‘sister’ (in a seductive song)
<lamn’en>	[lamɲen]	[lamɲen]	‘sister’ (disdainful greeting)

The most surprising item here is the case of ‘sister’ where the palatalisation and dentalisation appear to affect the velar nasal, against the more general pattern that is circumscribed to

³⁶“Usan también otro modo más peculiar y con él consiguen diminutivos y aumentativos análogos a los castellanos terminados en *ito* y *azo*, respectivamente. Para estos fines, en los primeros cambian la consonante dura en suave, ne los segundos añaden al sustantivo la partícula *rke* (ərke) v. gr.: *fótəm* hijo, *fochəm* hijito; *domo* mujer, *fomo* mujercita; *duam* negocio, *fuam* favor. *Trewa* perro, *trewarke* perrazo, *üñəm*, *üñəmərke* pajarazo, etc.”

coronals. While we have seen that this alternation is observed — albeit very sporadically — in contemporary eastern varieties (Díaz-Fernández 2007, §2.3), we note that Lehmann-Nitsche’s data gives no suggestion of the process affecting labials, as in present-day Chubut. We turn to the implications of this in §6.3.

While the historical record shows affective alternations to be elusive for corpus analysis, due to written-language ideologies, the patterns described for contemporary Mapudungun appear to peak out at different key points, both in the metalinguistic commentary and in sporadic orthographic representation. On the one hand, the categorical differences in the coronal articulations are difficult for non-native speakers to perceive, as evidenced in particular by the case of the late identification of contrast between dental and alveolar stops. On the other hand, standard language ideologies conspire against representing contextual alternations, so the more the language is written — especially by native speakers —, the more conventionalised it becomes.³⁷ We have seen, however, that some forms appear to lexicalise the affective alternant (recall [ʃakɪŋ] ‘respect’ from [zakɪŋ] ‘think’), while others seem to lose their more evocative or iconic forms as their meanings become more conventionalised ([ful] ‘thump’ v. [ful-] ‘dump’).

4 Affective alternations in the morphology

Catrileo (1986: 12) makes the explicit comparison between the toggling of affective values permitted by Mapudungun coronal alternations, and the same semantico-pragmatic effects resulting from the morphology in other languages. The most obvious comparison here is between diminutives and palatalisation, as already suggested starting from the 18th century. So we find [foʃim] (elsewhere [foɰim]) often glossing the Spanish *hij-it-o* ‘child-DIM-M’. In most cases, however, a lexical item is also available, such as [pitʃi] ‘small’ in [pitʃi ʃsewa] ‘little dog’ glossing Spanish *perr-ito* ‘doggy’. In such cases, furthermore, the target word need not undergo the consonantal alternation (i.e. here [ʃsewa] does not palatalise to [tʃsewa]).

Since size is the most concrete or explicit meaning of diminutives, it is unsurprising such forms are easier to elicit, and that the written record for Mapudungun reflects them either through lexical resources or palatalization. The more pragmatic dimensions of diminution, including politeness, epistemic uncertainty, affective proximity, sarcasm, etc. (see Ponsonnet 2018a, Rose 2018, Guillaume 2018), are far less likely to be conveyed by lexical resources. The pragmatic palatalisations, furthermore, may not make it in to the written record and they will be less easily elicited out of context.

For dentalisation there seems to be no transparent link to what in other languages might be explicitly size-based augmentative morphology (e.g. Spanish: *-ote*, *-ota*, *-azo*, *-aza*, *-ón*, *-ona*). There is some evidence for this potentially being the case etymologically, in words referring to inherently large things or quantities, like [alɰi] ‘(too) much’, [mɰte] ‘much/many’ or [feɰte] ‘so much’, however the forms seem highly lexicalised (cf. Table 6 and §6.3). This lack of a synchronically transparent size-based augmentative means that the dentalisation processes are much more subtle overall, encapsulating more pragmatic functions associated to augmentation, such as deference, disapproval, abruptness, distance or disdain (see Ponsonnet 2018a

³⁷Additionally, documentation doesn’t always favour the representation of these features, as argued by Ponsonnet (2018b)

for a crosslinguistic overview) and hence being difficult to elicit.

With this in mind, we may turn to ask whether coronal alternations might become fixed not only at the word level, but also at the level of the affixal morphology of the language. Indeed, there seem to be a handful of suffixes within the language’s large repertoire (over one hundred in Smeets’ 2008 grammar) that have clear connotations akin to those we find in the usage described by Catrileo and evidenced in the corpus data for consonant alternation.

4.1 Diminutive [-iʎ]

While not a productive suffix in present-day Mapudungun, word-final [-iʎ] — termed *appreciative diminutive* by Villena et al. (2019) — is common in words that seem to refer explicitly small-sized referents, especially when compared to their non-suffixed counterparts. These relationships can be seen in Table 19, based on entries from Augusta’s dictionary (1916). Interestingly, the diminutive semantics of the suffix seems to go hand in hand with the presence of a palatal lateral, in line with the more general process in the language, even though it appears to be restricted to the suffix (note the lack of palatalisation of the medial coronal fricative in *fodüll* ‘pit/stone’).³⁸

Table 19: Words ending in <üll> ([-iʎ]) and possible base forms in Augusta 1916

Suffixed word	Gloss	Proposed base	Gloss	
<changüll>	[tʃaŋiʎ]	<chang>	[tʃaŋ]	‘leg, branch’
<añapüll>	[aŋapiʎ]	<añay>	[aŋaj]	‘friend’
<pangküll>	[paŋkiʎ]	<pangi>	[paŋi]	‘puma’
<fodüll>	[foθiʎ]	<fodo/foro>	[foθo/fozɔ]	‘bone’
<kowüll>	[kowɪʎ]	<ko>	[ko]	‘water’
<kufüll>	[kufiʎ]	<kuf>	[kuf]	‘bloated/empty’
<wimüll>	[wimiʎ]	<wima>	[wima]	‘rod’

4.2 The evidential [-(i)zʎe]/[-(i)θke]

Already in his 18th century grammar, Havestadt notes that the evidential suffix [-zʎe] alternates *ad libitum* (‘freely’) with [-ðke], [-ske] and [-zke] (1777: 103). Contemporary grammars and studies (Salas 1992, Zúñiga 2006, 2003, Hasler 2012, Hasler et al. 2020), referring to the retroflex form [-(i)zʎe], describe the morpheme as an evidential, with two main roles: reportative/inferential (REP) and perceptual/admirative (ADM), which I exemplify in (7).³⁹

³⁸A candidate for the same process or even the same suffix is the form <pchillu> in Valdivia’s 1606 grammar, which is glossed as *poquito* ‘a little bit’, where the root is clearly [pitʃi] ‘small’. Another case might be the word for ‘elbow’ [chunil], also in Valdivia (compare Augusta *chunui*, *chunuyküley*, *chunuykünuwün*). See also Pache (2014: 352 ff.) regarding the origins of [-iʎ].

³⁹Glossing: RI: ruptured implicature (see Golluscio 2000); IND: indicative; VBLZ: verbaliser; PART: particle; 3: third person; 1: first person; s: singular; A: agent; P: patient.

- (7) a. *kijne zupat̃fi kijne domo kalko-zke nie-zke-fu-j aḷiṅ piṅeṅ.*
 one occasion one woman witch-ADM have-REP-RI-IND.3 much child
 ‘One time, a woman who turned out to be a witch, it is said had many children.’
 (Salas 1992: 269)
- b. *tifat̃fi f̃sewa-zke amta waṅki-waṅki-ṅe-j kom pu?*
 this dog-ADM PART bark-bark-VBLZ-IND.3 all night
 ‘This dog (which I see here) barked continually all night?’
 (Augusta 1903: 327)
- c. *maj, fej-izke, iṅt̃je taji pe-fi-ṅ tifat̃fi f̃zewa.*
 yes, 3-ADM 1s a.while.ago ver-3.A-IND.1.S.P this dog
 ‘Yes, that is it, I saw that dog (barking) a while ago.’
 (Augusta 1903: 327)

The relationship between the two functions is fairly straightforward in that an element in the discourse which is worth the extra focus of the admirative is also worth highlighting to an interlocutor as something that has been reported to be of import or surprising (DeLancey 1997). The further link to the augmentative interpretation — given by Moesbach (1962) — is also unsurprising, as these forms entail something which elicits an emotional or affective reaction, thus linking to an interpretation of the suffix as a form of evaluative morphology (Grandi & Körtvélyessy 2015).

Interestingly, the earliest attestations of the suffix in Valdivia (1606, 1621) show exclusively <dque> ([-ðke]) spellings, while contemporary usage strongly favours <-rke> ([-zke]). The early forms, exemplified in (8) appear to be of the admirative type, much as in (7b-c), appearing always in a contrastive context. In Valdivia’s sermons (1621), the suffix surfaces in particularly exalted sections, usually speaking to God directly, as in <geuelay ta ca dũgu ta vfchivalu, eymidque> ‘there is no other thing worthy of adoration, you alone’.

- (8) a. <quiñe-dque> one-ADM ‘each one’
 b. <Christo-dque> Christ-ADM ‘Christ alone’
 c. <eymi-dque> 2s-ADM ‘you and no other’

While the exact diachronic path that this suffix might have taken is unclear, there seems to be an early tendency for the emphasis — the mirative meaning — to share the phonological marker of pejoration or rudeness, showing perhaps the abruptness of a change in focus (see Yliniemi 2021) or, indeed, an original augmentative meaning. In any case, the [-ðke] form certainly aligns with the more general semantico-pragmatic connotations of dentalisation, to wit, the strong affective involvement placed upon the form. The apparent loss of the phonological exponent in more recent corpus attestation may be seen as a mark of the broadening of the meaning of the suffix or simply a case of our data becoming more conventionalised (though see Augusta’s 1934 examples in §3.2.1).

4.3 The ineffectual [-pɪʒa]/[-pɪθa]

According to Moesbach (1962: 103), this modal suffix has pragmatic implications of futility, excess or injustice of the action denoted (see also Zúñiga 2017: 700–701 and Hernández et al. 2006: 127), recoverable in (9).⁴⁰ It is also claimed to have a range of forms, including [-pɪθa], [pɪʒa] and [pɪʃa].

- (9) a. [kim-pɪθa-jafu-jmi]
know-INEF-COND-IND2S
'You would have known anyways' (Moesbach 1962: 103)
- b. [amu-pɪθa-n]
go-INEF-IND1S
'I went there to no avail' (Hernández et al. 2006: 127)
- c. [puw-ɪl-uw-pɪθa-jmi]
go.there-CAUS-REFLEX-INEF-IND2S
'you defend yourself in vain' (Coña 1930: 207)
- d. [iʌku-tu-pɪʒa-n]
anger-VBLZ-INEF-IND1S
'become angry with someone for no reason' (Augusta 1916)

As with [-zʃe], the basic meaning of the suffix seems to enclose the idea of a rejection of another state of affairs, and perhaps a degree of frustration, which correlates with the use of the dental fricative. Given the forms with [ʒ], we may assume that the retroflex form is its neutral realisation, at least etymologically. As a verbal root, [pɪʒa] has the meaning 'ascend/mount', which may entail the idea of effort, while the dentalisation entails a displeasure or sarcastic attitude towards these attempts, ultimately morphologising into the frustrative or ineffectual semantics of the suffix.

All in all, it seems that the alternations in suffixal forms can be independent from overall alternations in the phonology (i.e. non-palatalised/dentalised coronals appear in the root). However, semantics or pragmatics of the relevant suffixes, appear to be supported by the meaning of the consonantal shift (diminution/pejoration/admiration). The exact diachronic path by which this would have come to pass is unclear. On the one hand, it is possible that the suffixes would have acquired the affective connotations and the concomitant articulations as the result of being attached to words which often underwent these processes. Conversely, the general semantics of the suffixes could have attracted the same processes as roots, independent of the roots themselves, eventually morphologising to varying degrees.

⁴⁰These examples are all from sources using fairly distinct orthographic conventions, however in all cases, this usage is explicitly stated by the authors, thus allowing me a fairly solid mapping onto IPA characters. While generally phonemic in nature, I have given the transcriptions in square brackets to show that, particularly in the 'affective' alternations, these are not meant to represent underlying representations.

5 Coronal alternations and sound-symbolic behaviour

*“The spotted hawk swoops by and accuses me,
he complains of my gab and my loitering.
I too am not a bit tamed, I too am untranslatable,
I sound my barbaric yawp over the roofs of the world.”
W. Whitman, Song of Myself §52*

Sound-symbolism is the general principle by which meaning can be more or less directly mapped on to phonic substance.⁴¹ As such, it subverts the more widespread principle of the arbitrariness of the Saussurean sign, narrowing the gap between signifier and signified (cf. de Saussure 1916, Joseph 2024). While languages and cultures vary in their reliance on them, sound-symbolic items and processes are by no means rare (Dingemanse 2018). Sound-symbolic behaviour, furthermore, is on a cline with fully conventionalised (read: arbitrary) spoken-language behaviour and shows substantial contextual variation (i.e. ‘pluripotentiality’ in the sense of Winter et al. 2021). Hence, on one pole are fully involuntary vocal expressions of a speaker’s internal state⁴² — Whitman’s actual ‘barbaric yawp’ — which Dingemanse (2023) and Winter et al. (in press: 24) point out are reactive and not iconic in nature, so may be best treated as outside the realm of ‘symbolism’ proper. On the other pole are items fully dissociated from their referent — words such as *roofs* or *accuses* — which are straightforwardly arbitrary. In between the two poles lie more clearly imitative, onomatopoeic elements — the word *yawp* — and conventionalised ‘phonaestemes’ such as the /sw/ cluster in *swoop*, conveying swift movement (compare *swing*, *swish*, *swat*, etc. — see Kwon & Round 2015). While the first of these clearly stand in a resemblance relationship between sound and meaning (*iconicity*), the latter have a systematic, sub-lexical correspondence to meaning which, nevertheless, is not as transparently mapped to aspects of their referent (Winter et al. in press).

Key to our later discussion is the category of ‘synaesthetic’ sound-symbolic elements, which Hinton et al. (1994: 4) consider to be the “acoustic symbolization of non-acoustic phenomena”. An example of this might be simulating spatial extension by using vowel length, as in a recitation of Whitman’s poem with an elongated form or the word *w-o-o-orld*. This type of iconicity is fairly transparent and often claimed to be universal, as are the use of high pitch for small things and low pitch for large ones (cf. Ohala 1994, Winter & Perlman 2021, Akita et al. 2024). However, such sound-symbolic phenomena are prone to become conventional (Hinton et al. 1994: 4), and hence acquire language-specific patterns which no longer map as directly to the physical properties of the referent, even if they are cognitively real for speakers (as in the /sw/ cases, above).

Another important observation in the field of sound symbolism is that elements that fall in this domain may vary between more direct attempts to represent the sounds associated to the referent — which transgress the structural features of the linguistic system — and attempts to represent those sounds more conventionally, using the resources already available within the language. Rhodes (1994) refers to the first group of as ‘wild’ forms and the second

⁴¹In Sapir’s formulation, sound symbolism is “the expressively symbolic character of sounds quite aside from what the words in which they occur mean in a referential sense” (1929: 225). Similarly, Knoeferle defines it as “the non-arbitrary mappings that exist between phonetic properties of labels and perceptual properties of their referents” (2017: 1).

⁴²These expressions are problematically termed ‘corporeal sound symbolism’ by Hinton et al. (1994: 2).

as ‘tame’ ones. Among ‘wild’ usage we might count the use of ejectives in non-ejective languages to denote exasperation or disapproval ([stɒp] ‘stop!’), or the use of snorts to imitate a pig’s vocalisations. Note that while both these options are available to English speakers, they may also use phonologically ‘tame’ forms like *stop!* [stɒp] or *oink* [ɔ̃ŋk] to similar ends. In other languages, matters seem to be somewhere in between, with a clear subset of ‘expressive’ phonic elements available as an extended sound inventory for the language (see Silverstein 1994 and Sapir 1911 for examples of this in Waco-Wishan, and Nuckolls et al. 2016 for Pastanza Quichua).

5.1 Size symbolism and the ‘Frequency Code’

Although it shows different degrees of conventionality, a crosslinguistically well-established synaesthetic tendency is the correlation of vowel height and physical size of the referent: high front vowels relate to small things and back vowels, to large ones (Sapir 1929, Ohala 1984, Shinohara & Kawahara 2010, Akinbo 2021).⁴³ This is seen, in particular, by the presence of high front vowels in the vast majority of diminutive markers found across languages (over 90% for the sample in Ultan 1978). Closely related, the link between palatal consonants and diminution — with concomitant positive affect — has long been recognised as a sound-symbolic one (Nichols 1971, Alderete & Kochetov 2017). As we shall see, however, the opposite associations, related to ‘large’ size have a less predictable segmental correspondences.

A systematisation these kinds of sound-size relations was proposed by Ohala (1984, 1994) as the ‘Frequency Code’, which observes that sounds with a higher acoustic frequency correlate to small things and sounds with lower frequency correlate with large things. This pattern may be realised suprasegmentally (via tone) or segmentally (via vowels and consonants) as summarised in Table 5.1. Crucially, for Ohala these patterns are ethologically based, that is, they result from advantageous evolutionary adaptations. This is visible in other species, where body size correlates to differences in fundamental frequency of the emitter of the sound and becomes linked to aggression and submission. This does not mean that a universal linguistic equivalence is expected, but that there is an underlying bias towards these associations. Indeed, in experimental settings, perceptual size-to-frequency correspondences were first identified nearly a hundred years ago (Sapir 1929), and continue to be corroborated today (see Lockwood & Dingemanse 2015 and Knoeferle et al. 2017 for a review and more recent evidence).

Table 20: Suprasegmental and segmental predictions of the ‘Frequency Code’ (Ohala 1994: 335). *For consonants, the frequency differential refers to bursts, friction noise and/or formant transitions

‘small/sharp/fast’	‘large/soft/slow’
high tones	low tones
high F2 vowels	low F2 vowels
higher frequency consonants*	lower frequency consonants*

In cases of strict size symbolism, the consonantal pattern seems to hold well, as in the case

⁴³Although see Diffloth (1994) for a reversal of this pattern in the Mon-Khmer language Bahnar.

of Wishram in the description by Sapir (1911), where fortis consonants (higher F2) represent diminution and lenis consonants (lower F2) represent augmentation. The claimed extension of these frequency-code patterns to domains such as general affect and politeness are more problematic. In a recent paper, Winter et al. (2021) find that these biologically-rooted explanations fall apart where there is more cultural embeddedness of the relevant expressive function. Ultimately, frequency (fundamental or otherwise) can be put to a variety of linguistic uses, making the more basic size-based associations opaque, even if retrievable in certain experimental contexts.

5.2 Sound symbolism and the Mapudungun coronal alternation

Given the well-established link between palatalisation and diminution, explaining the Mapudungun phenomena discussed in this paper as cases of straightforward sound symbolism is tempting. While we do indeed see clear evidence for the use of iconic resources more broadly — and frequency more narrowly — in the expressive alternants of Mapudungun coronals, it is also true that these patterns are highly mediated both by contextual semantics and by phonological structure.

We have seen that although palatalisation is occasionally used to express the literal (small) size of the referent, this is only one of the range of its meanings, which include pragmatic operations to do with approval, politeness or deference. Conversely, dentalisation is rarely used as a means to express (large) size, even though dentals are found in non-alternating words with the meaning ‘much’ or ‘big’ (see Table 6). Far more common are dentals’ broad range of pragmatic implications to do with rudeness, deprecation, pejoration, disgust and general distancing. Indeed, while there are some cross-linguistic tendencies for morphological diminution and augmentation to have an extended range of meanings of this type, these may be very culturally specific and unpredictable (Ponsonnet 2018a). With this in mind, any direct iconic links that might be proposed between dentals and augmentatives are not particularly transparent as regards ‘largeness’, weakening the explanatory power of size-based sound symbolism, at least for the synchronic grammar of Mapudungun and particularly for dentalisation therein.⁴⁴

As for the sound structure itself, given Ohala’s (1994) claims that consonants with higher F2 in bursts, frication or transitions correlate to small size, it is not surprising to see palatals, with the overall highest F2 transitions by place of articulation (cf. e.g. Nirgianaki 2014, Tabain et al. 2020), as the prime candidates for diminution (see also Alderete & Kochetov 2017). Following this same metric, we would expect that consonants with the lowest F2 transitions — velars and labials — would make for the ideal loci for representing large size, rather than dentals. Indeed, as Ohala himself claims, the biggest consonantal place opposition we might expect as regards the frequency code would be between coronals and non-coronals (1994: 335). The fact that this is not the case for Mapudungun aligns with a number of studies where the fre-

⁴⁴A reviewer suggests an interpretation of the Mapudungun facts (also mentioned by audiences at MFM30 and ICHL25) such that the interdental, insofar as they entail tongue protrusion, might be related to the ‘tongue-out’ gesture found in many cultures (e.g. in Maori warrior dance) to express ‘rudeness, disgust, playfulness, or outright provocation’. While this is a tantalising possibility for rescuing an explicitly iconic meaning for the dentals, my consultant saw no particular link between gesture and sound in her own experience and I have been unable to find any mention of this gesture as a cultural feature in the anthropological literature on Mapudungun. As a community outsider, and in the absence of broader cross-cultural evidence for the universality of the gesture, I hesitate to back such a claim.

quency code does not seem to be clearly borne out in the grammar of individual languages, especially for the ‘large’ end of the scale (cf. Diffloth 1994, Bauer 1996, Haynie et al. 2014).⁴⁵

Among coronals themselves, however, there does seem to be evidence for dentals being set apart, in particular, by their low F2. Indeed, recent phonetic work on the dental-alveolar opposition in Mapudungun (Fasola et al. 2015, Figueroa et al. 2019) shows the main parameter distinguishing them is F2 at the onset of adjacent vowels, where dentals cause a greater depression than alveolars.⁴⁶ This is compatible with the kinds of results in Knoeferle et al. (2017), where lower F2 is statistically associated to the perception of larger size under laboratory conditions. Nonetheless this fails to explain why non-coronals — with even lower F2 — do not participate in the purported iconic alternation.⁴⁷ In other words, if the frequency code does have any relevance to the ‘large’ end of size symbolism for Mapudungun, this is not fully phonetically transparent, but is quite deeply embedded in the phonological system, such that the more transparent, non-coronal, low frequency forms (labials and velars) are set aside in favour of coronal-internal lowest frequency (dentals). While this highlights the centrality of coronals in Mapudungun, it detracts from the idea of the frequency code as a domain-general size-iconic mechanism.

Summing up, then, while we do see evidence for some general sound-symbolic behaviour in the expressive coronal alternations of Mapudungun, these also show a high degree of conventionalised (Saussurean!) relations, both in their semantics and their phonology. Indeed, while we might conjecture a historical stage where dentalised forms were transparently associated to ‘large’ meanings, this pattern would be long lexicalised or morphologised (see §6.3, below) before the written record. There is, furthermore, no particularly compelling cross-linguistic evidence upon which we could assume that ‘large size’ is the typical meaning of augmentatives (Ponsonnet 2018a), or, indeed the semantic origin of the dentalised forms. At least as likely is the conjecture that the dentalisations result from the paradigmatic extension of iconic palatalisation to a different laminal articulation, such that they mirror the (size-independent) semantic distinctions between diminutives and augmentatives, i.e. they appear to simply express the contrary of the meanings of the palatalisations.⁴⁸

6 Formalisation

Seeing as how we have shown that the coronal alternations of Mapudungun cannot be simply characterised as iconic, sound-symbolic processes, divorced from broader structural aspects of the language, we now turn to asking exactly what kinds of structures should be at play and

⁴⁵In a survey of ‘smallness’ and ‘nearness’ vocabulary in the languages of Australia, Haynie et al. (2014) find that back vowels and dorsals are not as strongly correlated with ‘largeness’ and ‘distance’ connotations as high front vowels and palatals are to the opposite traits.

⁴⁶These two studies focus only on non-fricatives. As a reviewer suggests, closer phonetic inspection of the [θ]-[ʃ]-[s]-[z] alternations may be quite revealing, as, crosslinguistically [ʃ] has a lower center of gravity in its frication noise than [θ]. This is, indeed, key future work, though outside the scope of this study. In Figueroa et al. (2019), the findings are statistically significant only for stops and laterals, a fact that is attributed to the smaller number of tokens available for the dental nasal.

⁴⁷A good comparison for fricatives is the case of Greek, where, while the F2 in the initial transition from dentals to vowels is slightly lower than for alveolars and palatals (the highest), the F2 following labiodentals and velars are far lower (Nirgianaki 2014).

⁴⁸I thank an anonymous reviewer for this suggestion.

where in the grammar these processes should be placed.

6.1 Affective alternations in the phonology: A featural approach

Both the present day and the historical Mapudungun data show that affective coronal alternations are not only principled in terms of their general meaning, but also that they are non-random in their phonological exponence. Structurally, the possibility of phonological computations such as our target alternations implies some kind of representations that facilitate them, grouping segments into natural classes. We therefore need to postulate a plausible set of features for the coronal consonants of Mapudungun and the geometry that supports it.

Excluding the easternmost (Argentinian) varieties, all the relevant expressive process are restricted to coronal place. As a result, it seems uncontroversial to posit that the coronal domain is of some structural relevance to the language. It is clear, furthermore, that there is a split within the coronals that relates to the possibility of carrying expressive meaning. We have shown that the alveolar and retroflex consonants are by and large expressively neutral, while the dentals and palatals are often expressive. We have also noted that alveolars and retroflexes share apical articulations in Mapudungun, while the dentals and palatals share laminal ones, so we assume that apicality/laminality is a key dimension of variation, much in the same way as it is for Arandic and other Pama-Nyungan languages of Australia (Fletcher & Butcher 2014). Finally, we know that there is also a distinction within the laminals, such that one group is anterior (the dentals) and associated to augmentational semantics, broadly construed, while the other is non-anterior (the palatals) and is associated to diminutive semantics. Similarly, the apicals show a contrastive difference between anterior alveolars and non-anterior retroflexes, particularly for the stops and fricatives. This leaves us with a series of hierarchically organised distinctions, as shown in Table 21.

Table 21: Contrast matrix for Mapudungun coronals

Coronal			
laminal		apical	
anterior	posterior	anterior	posterior
t̪	t̪ʃ	t	t̪ʃ
θ	ʃ	(s)	z̺
n̪	ɲ	n	
l̪	ʎ	l	

Laminal-apical contrasts have long been argued to be fundamentally characterised by the feature [DISTRIBUTED] (Chomsky & Halle 1968, Clements 2009, Rice 2011), distinguishing dentals from alveolars and palatals from retroflexes. This pattern is surface-true for present-day Mapudungun stops, nasals and laterals — where the contrast is indeed between laminals and apicals —, however the fricatives ([θ] v. [ʃ]) display a different pattern. Here, /s/ is a recent borrowing and patterns with the apico-alveolars while not being phonetically apical itself (Sadowsky et al. 2013, Molineaux 2022). Given that there is no other well-established, phonetically-grounded feature that might bring together /s,t,n,l/ in opposition to /θ, t̪,n̪,l̪/, we

must contemplate the possibility that, while /s/ is phonologically in a natural class with the apical-alveolars, it lacks a clear one-to-one mapping to the phonetics. This suggests that the phonology operates here as an independent symbolic system, giving credence to substance-free approaches to phonology (Hale & Reiss 2000, Odden 2006, Iosad 2017).⁴⁹

Adopting a unary feature analysis ([—] represents lack of specification at the relevant tier), a feature geometry for the Mapudungun coronals is given as Figure 2. Feature labels are provided for familiarity’s sake, rather than for the strong implication that these are mapped on to articulatory or acoustic targets.

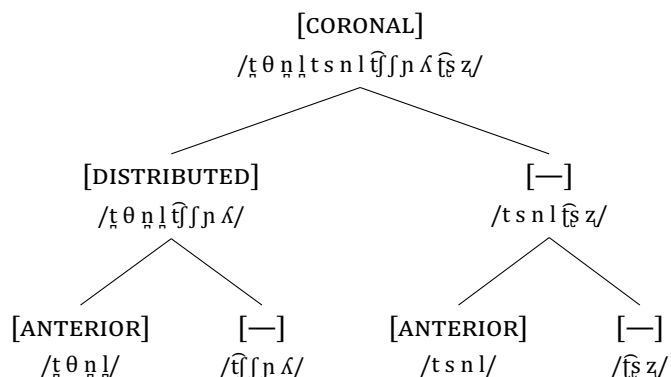


Figure 2: Proposed feature tree for Mapudungun coronal consonants

The hierarchical organisation of [DISTRIBUTED] over [ANTERIOR] is justified by the fact that both affective dentalisation and palatalisation must be the result of active processes, requiring a specified feature. The loss of the feature [ANTERIOR], in the case of palatalisation, cannot be effected by a feature that is not active itself. However, if the entire [DISTRIBUTED] node is replaced, then the dependent tiers (specified or not) may be inherited (see §6.2, below). This is in line with the more general assumption that, in acquisition, features are postulated by the learner to define a natural class that participates in contrast and alternations (Dresher 2009, Chabot 2022: 437).

6.2 Representation: affective alternations as evaluative morphology

In our review of the Mapudungun materials, we noted that while amenable to a sound symbolic interpretation at a certain level of analysis, the affective alternations we have described often become lexicalised or morphologised, and hence fail to alternate with the same contextual freedom. Here, I take this observation to its logical conclusion, which is that for speakers who have the key alternations active in their grammar, these can be treated as processes of

⁴⁹Contra Molineaux 2022, where a feature [STRIDENT] is proposed in order to specify /s/, I here argue that this segment’s participation in the affective alternations requires a shared feature with /t,n,l/. Other possible explanations for the pattern, as suggested by a reviewer, are simply the phonological uniqueness of /s/ across language (e.g. its extrametricality, phonotactic patterning and ability to mismatch between phonetic realisation and phonological category, as in the case of Panāra, as described by Lapierre (2023), where [s] patterns as a palatal, even though it is not phonetically palatal), or a more language-specific featural system for the language, in line with an Emergent Features approach, à la Mielke (2008).

morphological derivation of the evaluative type (typically diminutives, augmentatives and related morphological elements, see Bauer 1997, Grandi & Körtvélyessy 2015, Merlini Barbaresi 2015), which have the range of semantic and pragmatic meanings described by Catrileo (1986, 2010).

A number of other phonic resources are known to convey emotion across languages, but tend not to be considered a part of the morphological system. These include the modulation of pitch and volume or changes in speech rate and phonation type (see Besnier 1990). Such processes tend not to be circumscribed to individual lexical items or to be regularly productive, as the affective alternations are. They also tend not to have the kind of clear integration with the phonological system which we see in the affective alternations of Mapudungun. Indeed, the phonology of the affective patterns seem to mirror what we find in concatenative morphological processes. Crucially, the alternations are not phonetically gradual, but replace one contrastive segment of the language with another (see 2.2 above). Note, for comparison, that Mapudungun also has purely phonological palatalisation targeting alveolars in the context of preceding high vowels: /kim-fi-n/ → [kimfij̥] know-3OBJ-IND1S ‘I know them’ (see Molineaux in press).

Interestingly, however, the phonological processes involved in the affective alternations must be sub-segmental, consisting simply of the features necessary to convey the relevant affective alternation. This kind of pattern, where sub-segmental phonological alternations are used by speakers to convey affect, have been described for a number of languages, including Japanese (Mester & Itô 1989), Basque (Hualde 1991), Beja (Vanhove & Hamid Ahmed 2018) and Funguwa (Akinbo 2021). In such cases, the features themselves may be treated as the only phonological exponents of the relevant morpheme. These *floating features* behave much in the same way as tone-only morphology does (cf. Clements & Ford 1979, Hyman 2011), in that they can be analysed as autosegmental in nature, without a pre-ordained segmental slot (see Akinlabi 1996 for an overview of tonal and non-tonal floating features). As such they are computed at the same level of the grammar as other morphological processes and interface with phonology in a similar manner to fully segmental morphemes. However, in this case, their presence is only perceptible by their effect on segmental material where there is a suitable target for the feature (a coronal consonant).

Provided with this autosegmental architecture (*à la* Goldsmith 1976) and the feature geometry proposed in the previous section, the affective alternations are surprisingly simple in their representation. Positive affect is characterised by the presence of a diminutive floating morpheme with the feature [DISTRIBUTED], while negative affect requires an augmentative morpheme with both the feature [DISTRIBUTED] and the dependent feature [ANTERIOR], as in (10).

(10) Floating morphemes

a. *Diminutive (DIM)*

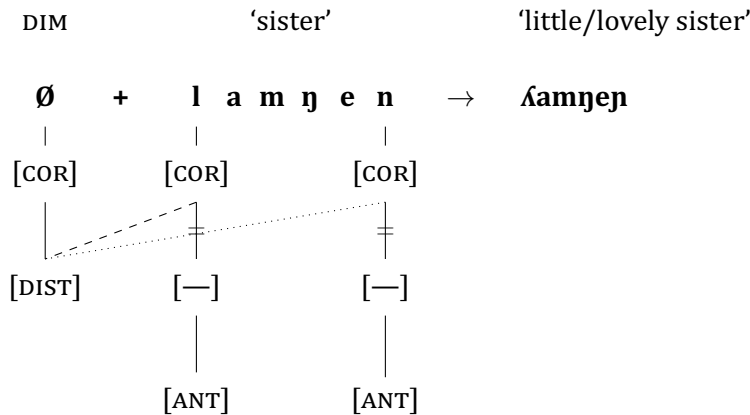
[COR]
|
[DIST]

b. *Augmentative (AUG)*

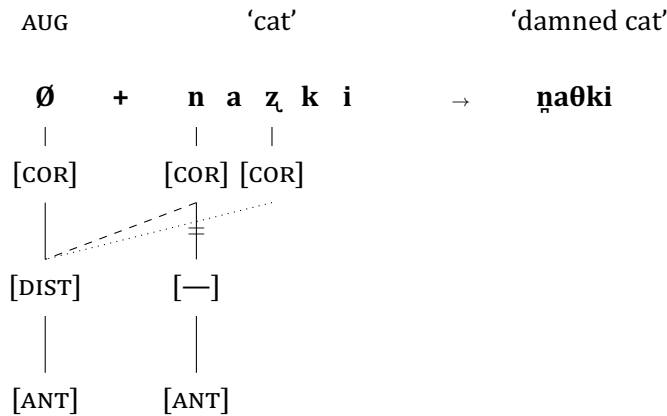
[COR]
|
[DIST]
|
[ANT]

Note that the featural tier below [DISTRIBUTED] is only specified for the augmentative. Indeed, in this system we assume that spreading of a feature entails spreading of any or no dependent features. Furthermore, given that the overall pattern we observed in §2.3 seems to affect coronals from left to right, with earlier coronals being consistently affected and later ones less so, we assume that the floating morphemes attach to the left edge and spread rightwards to segments with a coronal node, as exemplified in (11) and (12). The number of affected segments after the first appears to present some speaker variation, hence the dotted lines in the figures, representing weaker links.

(11) Diminutive (DIM) feature spreading



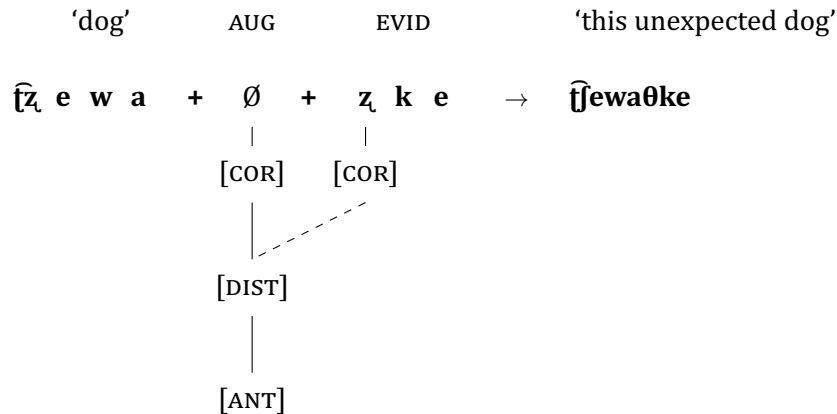
(12) Augmentative (AUG) feature spreading



While the process we suggest here predominantly affects lexical roots, some of the alternations are also found in affect-laden suffixes (particularly [-zke] and [-piza], see §4.2 and §4.3). It is not inconceivable that the floating morphemes can also attach to a subset of these suffixes, as exemplified in (13). We assume here that the floating feature attaches to the left and spreads rightwards, in line with what we have observed for roots. The possibility of attaching to these suffixes seems to be related to their specifically discourse-level functionality. Indeed,

both the evidential ([-zke]) and the ineffectual ([-piza]) seem to emphasise a surprising, noteworthy or frustrating state of affairs, somewhat independent from the evaluation of root they attach to, hence the evaluative morphology is attached to this particular discourse element.⁵⁰

(13) Feature spreading to suffixes



An interesting potential corollary of this autosegmental analysis is an explanation for the fossilised ‘dental harmony’ that has been proposed for Mapudungun root morphemes (Campbell 2015, Bickel & Zúñiga 2017: 172). In brief, this proposal stems from the surprisingly common tendency for anterior coronals to share the same position of the active articulator within a lexical root, leading to the assumption of a consonantal harmony process (see Hansson 2010) that spreads dental articulations to alveolars or vice-versa (no attempts at formalisation exist for the Mapudungun data, to my knowledge). This leads to dental-only roots: [ṭo] ‘forehead’, [ṇeweṇ] ‘strength’, [ʎafḳe] ‘sea’, and alveolar-only ones: [piltan-] ‘tear apart’, [liuq̣en] ‘silver’ and [soṇi] ‘wrinkle’. While exceptions do exist — cf. [ṇel-] ‘let loose’ and [ʎuan] ‘guanaco’, in Augusta (1916) — the generalisation seems to hold, and may indeed be stretched further to include all features below the coronal tier, such that, within a root morpheme, coronals will generally have the same specifications: cf. [ṭjamaʎ] ‘shawl’, [ʎawf̣e] ‘shade’, [kof̣ʂuz] ‘toasted’.⁵¹ While synchronically this is likely more of a fact about the structure of the lexicon, it is suggestive of the diachronic depth of these kinds of feature spreadings, independent of their current affective implications.

More generally, the patterns we have observed have striking reminiscences with other systems with pervasive laminal-apical distinctions, such as those we find among Australian languages. Within the Arandic sub-family of Pama-Nyungan, we see a direct parallel to the

⁵⁰An alternative approach to the autosegmental, floating-morpheme approach, as suggested by a reviewer, is to see the palatalisations and dentalisations as what has been termed by Inkelas (2014) ‘process morphology’. This would entail that evaluative morphology does not have a concatenative structure in Mapudungun, but is rather the phonological process itself which expresses the semantic/pragmatic meanings of augmentation and diminution. A full development of this approach is outwith the scope of this paper.

⁵¹There seems to be no restriction of nasals and laterals co-occurring with retroflexes, as there are no nasal and lateral retroflexes to fit the pattern: cf. [ẓali] ‘dish’, [naʃ̣iŋ] ‘Solanum Gayanum (plant)’. More unexpectedly, the dental fricative seems not to have the same restrictions, particularly co-occurring with palatals: [θuʎi-] ‘chose’ [ṭjoθ] ‘yellow’. This further suggests the more fundamental link between segments sharing a [DISTRIBUTED] feature than an [ANTERIOR] one, as implied in our geometry.

four coronal places of articulation of Mapudungun. In such languages, consonants are often organised as peripheral (labial and velar) v. laminal (dental and palatal) v. apical (alveolar and retroflex) (Fletcher & Butcher 2014). Still more interesting, we find that such languages are known to have special, socially marked registers where consonantal features are shifted in similar fashion to the affective forms of Mapudungun. For instance, Arandic ‘baby talk’ is a kind of child-directed speech where all coronal consonants are collapsed into laminal articulations (Turpin et al. 2014), very much as in the affective forms of Mapudungun.⁵² The patterns in both languages highlight speakers’ ability to actively treat dentals and palatals as a natural category in a system of dense yet symmetrical coronal contrasts.

6.3 Affective alternations and language change

One of the most tantalising findings in our survey of affective alternation across time and space is that there is a tendency for Mapudungun varieties east of the Andes to have a broader application of the processes. Indeed, we see that, both in the materials for Chubut today (Díaz-Fernández 2007, §2.3 above) and from other historical Argentinian varieties registered by Lehmann-Nitsche (Malvestitti 2012, Table 18) the processes is not restricted to coronals, but may affect velars and even labials. The examples in the early 20th century data seem to affect velars both in terms of affective/diminutive palatalisation and pejorative dentalisation. While, as we have argued, this is a morpho-phonological process rather than a purely phonological one, the change we see seems akin to what is described as rule simplification (King 1969) or rule generalisation (Kiparsky 1988, Bermúdez-Otero 2015) in phonology. In other words, the rule expands the environment for its application, such that the spread of the coronal features is no longer restricted to segments containing the feature coronal, but affect all consonantal place features (assuming the 19c data where labials and velars are affected). While this kind of process could very well be the result of regular sound change, the fact that the evidence points to more lexically sporadic effects, as well as changes in the domain of application (in Table 18 palatalisation/dentalisation affects only one of the consonants in [lamɲen] → [lamɲen] ~ [lamɲen]), it may more broadly be classed as an analogical process, perhaps related to general language attrition and poor transmission of *Puelmapu* varieties (cf. Fernández-Garay 2002). In other words, it is more likely a result of the imperfect acquisition of the morphophonological rules suggested in §6.2.⁵³

More generally, it is worth considering the matter of lexicalisation of the affective alternants in Mapudungun. Terms with strong implicit size or affect seem to display invariant patterns of dentalisation or palatalisation that have long histories. However, there are a number of items in which we have seen change to their affective semantics, at least partially as a result of cultural changes, becoming mostly invariant today. Finally, we have words where there appears to be a semantic split, such that the neutral and affected forms survive with clearly differentiated meanings. These (admittedly fuzzy) categories are exemplified in Table 22.⁵⁴

⁵²A similar pattern is documented for Walpiri, a related language, where baby talk collapses coronal consonants into the lamino-palatal series (Laughren 1984).

⁵³The limited data on these varieties only allows for fairly speculative accounts, of course, and other possibilities for the stochastic application of these patterns could be outlined. Among these, the Agreement-by-Correspondence framework, in harmonic OT grammars (see Rose & Walker 2004), is a strong candidate.

⁵⁴Another interesting lexicalisation is the adverbial [miɽaj] ‘soon’, which comes fairly transparently from [miɽe] ‘more’, in a future [-a], third person form [-i], with a diminutive, politeness palatalisation: [miɽe] > [miɽe] + [a] + [i]

Table 22: Lexicalisation of affective alternants

Category	Dental	Palatal
Productive alternation	f̥sewa~tewa 'dog~damn dog'	f̥sewa~t̥jewa 'dog~doggy'
Long-term lexicalisation	ali 'much' ɲaj 'woe' moɫ- 'be wrong'	pi:t̥ji 'small' aɬa 'pretty' ɲom- 'be calm'
Recent lexicalisation	kalku<kalku 'wizard' poθ<poz̥ 'dirty'	fijku<Sp.fresko 'fresh/cool' mansun 'ox' <Sp.manso 'tame'
Semantic split	iɲuɲ 'foul-tasting'~ inun 'hold water in the mouth' kuθe 'nasty old woman'~kuze 'wife'	faki- 'respect'~zak- 'think' wep̥ni 'boy/child'~wep̥uj 'friend/trainee' kuje 'lovely old woman'~kuze 'wife'

A particularly interesting domain for the early lexicalisation category are kinship terms as well as terms of respect/endeavourment in Mapudungun. Here, the vast majority of items have coronal consonants that are either dental or palatal, such that their random occurrence would be extremely unlikely. The general connotation of these terms is one of closeness and positive affect or distance and respect, with a marked gender bias and generational asymmetry, as can be ascertained from Table 23 (based on Augusta 1916, Moesbach 1962, Zúñiga 2006). It seems that the coronal features of these words must have emerged from — or been reinforced by — the kinds of affective processes detailed above, becoming lexicalised at some historical depth long-preceding the textual record.⁵⁵

Term	Relation
ɭaku	Paternal grandfather/grandchild (Namesake)
fiɬa	Husband
fo:t̥im~fo:t̥jim	Son (of a man)
paɭu	Paternal aunt
miɲa	Cousin
ɲan:iɲ	Mother/daughter in law
t̥jaw	Father
ɲuke	Mother
peɲi	Brother (of a man)
θeja	Sister (of a man)
lamɲen~ɬamɲen	Sister of a man or sibling of a woman
ɬaɬa	mother/son in law
t̥jeθki~t̥jet̥je	Maternal grandfather/grandchild
t̥ju:t̥ju	Maternal grandmother/grandchild
ɲawe	daughter (of a man)
jaɬ	offspring (of a man)
piɲen	offspring (of a woman)

'it will be a bit more' > [mi:t̥jaɲ] 'soon'.

⁵⁵Further work is needed on the precise alignment of the diminutive/argumentative semantics of coronals and the specific significance of kinship relations in Mapuche culture.

kɔɲi	son (of a woman)
ɲeɲ	Owner/master
kɔɲa	Assistant
wenɲuj~weɲi	Trainee/boy/friend
ɲaɲa	Close female friend (of a woman)
katʃi	Partner/friend
mifa	Friends who share a meal
kompaɲ	Travel companions <Sp:‘compañero’>

Table 23: A representative sample of kinship terms and terms of endearment/respect

While the intricacies of the Mapudungun system of affective alternations is certainly unique, there is a long history of such patterns in languages of the Americas. Most significantly, Nichols (1971) surveys a rich and variegated series of systems of affective consonant shifts across languages of western North America. Given the phonological similarities she uncovers across unrelated languages, she concludes that independent development is unlikely and, while a small subset of the languages may have developed the alternations, borrowing is a more likely source (1971: 839). Where it did develop independently, one reason might be dialect borrowing, where the borrowed form has an alternate consonant and acquires a pejorative connotation. Another option is the existence of morpho-phonological alternations where the conditioning morpheme is lost. Be this as it may, the Mapudungun data does not seem to support any of these scenarios. Borrowing — at least recently — is unlikely, given the deeply entrenched nature of the alternations both in the lexicon and in the morpho-phonology (as argued in §3). Although parallels with Quechuan affective palatalisation is intriguing (de Reuse 1986, Halm 2020), dentals are not segments that are commonly found in the immediate linguistic neighbourhood, making the wholesale borrowing of the system less likely. Finally, the left-to-right nature of the spread also makes a vestigial morpheme analysis somewhat implausible, given the absence of prefixes in the language.

7 Conclusions

In this paper, we have attempted to shed some light on a phenomenon that inhabits the liminal spaces between phonology, morphology, pragmatics and the lexicon of Mapudungun. This ‘stylistic variation’, Catrileo (2010) tells us, reflects speakers’ language use within a particular context or frame of reference, and thus ‘the researcher will struggle to obtain an exhaustive dataset if they lack an adequate command of the language they are attempting to describe’ (52). It is therefore important that most of the observations made both for the contemporary and historical materials were the result of a process of shared reading with our native speaker consultant.

Despite the elusive nature of the alternations, our survey found a consistent thread of meta-linguistic and corpus evidence for active processes of affect-driven palatalisation and dentalisation spanning from the earliest written records to the present day. Here, the orthographic material is somewhat impeded by lack of consistent representation of dental consonants (in

opposition to alveolars) in the early period, and then by reduction of alternative root spellings, due to incipient standardisation. Nevertheless, the contexts where we do find the alternations — both extralinguistic and linguistic — are remarkably consistent, rejecting the position that they represent unconditioned ‘phoneme fluctuation’.

Palatalisation in Mapudungun generally conveys a constellation of meanings associated to diminution, including small size, proximity, approval, politeness and tenderness, while dentalisation is associated to augmentation, including deference, distance, abruptness, disapproval and harshness, being only occasionally tied to explicitly large size. We have shown that, while speakers appear able to actively call upon these associations by effecting segmental changes, there are cases where the lexical meaning of the item is repeatedly aligned with the affective implication of the alternant. In such words, the shifted consonant becomes invariant, and thus, indistinguishable from its lexical representations. The result is that certain affect-laden areas of the lexicon tend to have substantially larger proportions of palatals and dentals than the rest of the language’s vocabulary. In some cases, the unaffected form remains alongside the lexicalised affective form, creating new, true minimal pairs (see Table 22 and parallels in Nichols 1971: 830).

From a structural perspective, we have argued that the coronal alternations of Mapudungun are best treated as morphological processes, where dentalisation and palatalisation are effected by rightward spreading of sub-phonemic ‘floating’ morphemes in an autosegmental architecture. Starting at the left edge of the target morpheme, the relevant featural nodes dock on to the coronal consonants therein. In this context, the feature [DISTRIBUTED] was claimed to bring together all the affective processes and as such must be actively specified so that it can participate in the processes. The result of this is the higher ranking of [DISTRIBUTED] over [ANTERIOR] in our proposed feature hierarchy.

Finally, our data and analyses raise serious questions for a purely frequency-based sound-symbolic interpretation of Mapudungun consonantal alternations. We have shown that while the palatals conform to Ohala’s (1984, 1994) predictions for size-based diminution, dentals are neither the ideal low-frequency targets for augmentation, nor do they encompass the more canonical size-based semantics expected of such iconic mappings. Nevertheless, it seems very clear that, for native speakers, there is a non-trivial cognitive link between the laminal (dental and palatal) consonants and affect. These associations are both culturally and structurally embedded: they hold language-specific pragmatic readings and appear restricted to coronal places of articulation. The result is that, much in the same way as in Arandic baby talk, consonantal articulations realised with the tongue blade have a special status in Mapudungun, both structurally and semantically. Furthermore, what we have analysed as lexicalised, inherently affective forms, doubtless contribute to this percept, since they provide ample evidence for learners of what may synchronically be seen as phonaesthetic behaviour (recall /sw/-initial words in English, in §5).

The sound symbolic nature of the key Mapudungun processes is patently ‘tame’ in the sense of Rhodes (1994), demonstrating a high degree of cultural and structural embeddedness. Yet, as Catrileo points out, when a pronunciation ‘differs from the usually accepted patterns for the occasion’ (2010: 51), a stylistic or affective effect is produced. This is evocative of Difforth’s assertions about ‘expressives’ in Mon-Khmer, namely that “the structural elements necessary for prosaic language are deliberately re-arranged and exploited for their iconic properties” (1979: 58). Thus, in Mapudungun, the ‘affective’ shifts do not produce new

segments, but repurpose the ones at hand just enough to convey their meaning. Indeed, alternants remain by and large within the coronal domain, yet manage to ‘differ from accepted patterns’ sufficiently to trigger the evaluative interpretation.

While the diachronic route by which the language came to have affective coronal alternations is unclear, we see that these have left their mark on both the present-day lexicon and morpho-phonology. We can further trace such forms into the past suggesting an early lexicalisation of both size-related forms (recall [pɪtʃi] ‘small’, [aɫi] ‘much’) and affect-prone domains (e.g. inherently good/bad, kinship and endearment terms, etc.). In the synchronic grammar, it is our claim that the series of behaviours encompassed by affective coronal alternations cannot be purely iconic, but may be more parsimoniously subsumed within a robust, internally coherent series of morpho-phonological process where feature spreading conveys diminutive or augmentative semantics and their concomitant, language-specific pragmatic readings.

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