

# Consonant Changes in Loanwords Borrowed from Indonesian into Dialects of Acehnese

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## Abstract

Acehnese, like other regional languages throughout Indonesia, is in constant and intense contact with the Indonesian standard language, bahasa Indonesia. Not surprisingly, a great many Indonesian loanwords are flooding into Acehnese. Some interesting sound changes have affected various aspects of the consonants, vowels, phonotactics, and stress, and so forth. The sound changes affecting the vowels and, to a lesser extent, the consonants of Indonesian loanwords, appear in most unusual ways.

This paper explores this topic in detail, drawing on data from a range of sources. We compiled a list of 285 loanwords, which we recorded when read by native speakers of each of four main Acehnese dialects. The Acehnese language consultants to this study were all either academics or postgraduate students in Aceh, and hence fluent bilingual speakers of both Acehnese and Indonesian. We compared phonemic transcriptions of these recordings with their Indonesian correspondences.

This paper is the second such paper emerging from this investigation, where the first focused on the behaviour of the vowels. As such, this paper concerns the behaviour of the consonants in Indonesian loanwords migrating into Acehnese dialects. The study evidences the fact that consonant changes do not always constitute a simple case of phonological assimilation, as usually occurs in loanword phonology. Consequently, some consonant changes during the migration of loanwords expose the phenomenon of loanwords becoming an expression of Acehnese identity.

**Keywords:** *Acehnese, Language Contact, Loanword Phonology, Indonesian*

## Introduction

Located on the northern extremity of the island of Sumatra, in Eastern Indonesia, is the province of Aceh. Acehnese, the main regional language of Aceh province, is mainly spoken along its coastal areas. With two to three million speakers, Acehnese has a substantially large speech community, yet is under imminent threat, as younger Acehnese generations increasingly turn to bahasa Indonesia as their primary language, and as a great majority of young Acehnese parents use bahasa Indonesia in the home, to socialize their children into the Indonesian language. This language shift has increased significantly over the last few decades, largely owing to the intensified population shifts in the province following the 2004 tsunami and the 2005 peace deal between Acehnese separatists and the Indonesian government. However, contact between Acehnese and Indonesian has been long-standing.

The contact between the two languages has expectedly invited an exchange of elements of each language in the form of loan words and reappropriated vocabulary. This exchange has travelled in both directions, where Acehnese society has become increasingly bilingual. Yet, little anthropological work has emerged to describe the effects of this linguistic overlap in the province of Aceh.

This paper focuses on a corpus of loanwords borrowed from Indonesian and English and appearing in Acehnese, both as well-established and as recent vocabulary. In this study, we are concerned with borrowing processes from the period immediately prior to the opening up of Aceh province at the time of the 2004 tsunami, and until at the present time. Methodically, the study investigates the changes in the behaviour of consonants of these loanwords when entering each of four Acehnese dialects, by observing phonemic substitutions and phonemic additions during language migration. Here, the investigation reveals that the phonetic changes of long-established loanwords differ markedly from the phonetic changes of recently adopted words.

We organize the paper as follows: In the second section, Historical development, we discuss the formation of the Acehnese and Indonesian languages over the past several decades, and how these have influenced one other throughout that period. In the third section, Research method, we discuss the methodical framework relevant to the study, that is, the shift in consonant behaviour during transmission from one language to another. In the fourth section, Data analysis, we discuss the data, and evidence these changes and appendages during the exchange of vocabulary. Finally, in the final section, we conclude the study.

## Historical Development

Upon attaining independence in 1945, the Indonesian nation state adopted bahasa Indonesia, a language with its origins in the Malay language, and now operating as the national language of Indonesia. At the time of independence, the Malay language had already

achieved widespread use as a trade lingua franca, and was spoken in the port cities and towns throughout the archipelago. The Dutch colonial administration also employed the language for legal matters and pervasively for maintaining diplomacy. Whilst the language had relatively few first language speakers in Indonesia, its adoption served to strategically develop and maintain neutrality between speakers of different local languages, or for communication in courts or government offices.

Aceh initially remained aloof to the newly independent Indonesia in 1945, to maintain its own independent status. However, in 1947, Sukarno, the then president of Indonesia, embarked on efforts to persuade Acehnese leaders to join the Republic of Indonesia (Sulistiyanto, 2001, p. 438). According to Yusuf (2013), the Indonesian language had been tremendously influential throughout the Acehnese province as its official language at the time when the province came under the Indonesian constitution in 1950. As such, this period may have grounded an intense contact between the Indonesian central government and the local government of Aceh, leading to processes such as language borrowing and change between Indonesian and Acehnese. For example, teachers at schools began to use Indonesian as a language of instruction. Indonesian, as the national language, has since pervaded almost all aspects of public life, and has therefore affected, and has thus become noticeable, in almost all Indonesian local languages (Abdullah, 1999), in daily communication such as in the form of codeswitching.

This campaign to promote the Indonesian language in all formal and scholarly environments evidenced itself in Aceh, where bahasa Indonesia has appeared pervasively, for example, in courtrooms, by speakers at official events, and in schools, thus encouraging teachers to draw on Indonesian and not Acehnese in their classrooms (see also Yusuf, 2013). During formal speeches, speakers employ Acehnese expressions only for emphasis or for humour, thus skewing people's perceptions of bahasa Indonesia as the formal language vis-a-vis Acehnese, thus relegating Acehnese to a lower and marginalized status.

Alamsyah et al. (2011) found that Acehnese families typically prefer bahasa Indonesia to Acehnese in domestic environments, a shift which several factors have contributed to. For example, as Alamsyah suggests, ideologies throughout larger society are such that the use of bahasa Indonesia with children at home will strengthen comprehension in the classroom, and may also neutralise the use of Acehnese dialects. As such, a large majority of Acehnese people of all dialect backgrounds have likely had or have attempted to have contact with bahasa Indonesia, where dialects have forcefully or ecologically adopted loanwords from bahasa Indonesian, a process which thus in turn displaces Acehnese vocabulary (Zulfadli 2014).

## Lexical Influence and Borrowing

The pervasive influence of Indonesian has long and possibly increasingly altered the Acehnese phonological system, particularly for younger speakers. Through, for example, the replacement of the dental sibilant /S/, unique to the Aceh language (see, Durie, 1984) with the alveolar sibilant /s/. Whilst most Acehnese are fluent bilinguals in Acehnese and Indonesian, they tend to alter the pronunciation of loan words in such a way. Whilst some of the differences in pronunciation arise from the assimilation of lexical items into the sound system of Acehnese, most differences, especially in relation to the vowels (Aziz et al, forthcoming), result from the replacement of sounds that already occur within Acehnese.

Word borrowing appears as a common phenomenon in all languages (Miller, 2015), inevitable during contact between communities and their cultures (Khan, 2014), and may be manifest at any level, that is, from the single word up to a large set or family of lexical items (Hock, 1986). More often than not, lexical borrowing culminates in a lexicon of loan words which all begin as novel in the target language (Julul et al., 2019; Miller, 2015). According to Holmes (2001), this borrowing is usually motivated by the need for lexical items, where, according to Fromkin and Rodman (1998), borrowing occurs when one language invites words or morphemes from another language, often altering its pronunciation to fit the phonological rules of the borrowing. Some loanword process analyses have argued that production constitutes the main process and triggers adaptation of loanwords in the target language while perception plays a minimal to no role (Batais and Wiltshire, 2017).

One other approach describes the process of adaptation of loanwords as primarily occurring through bilingual speakers as the main carriers and adapters of the loanwords, yet purely through a phonological adaptation of these lexical items. Here, the speakers directly map the source language's phonological structure onto their own representation of the target native language, while not being acutely aware of the borrowing process. Scholars have employed this argument to support the notion of phonological mechanisms acting as central to loanword adaptation (Peperkamp and Dupoux, 2003; Peperkamp 2005; Vendelin and Peperkamp 2006; Davidson 2007; Peperkamp et al. 2008).

Yet another approach incorporates both phonological and phonetic processing, and foregrounds the concept of a distinct similarity between source and target language adaptations of these words, resulting in a multi-scansion of output, and more precisely, during both the perception and the operation of grammar housing these lexical items (Silverman 1992, Kenstowicz 2003, Broselow 2004). Another approach incorporates the perception of similarity of the words in both the source and target languages into the production of grammar (Kenstowicz 2007; Kim, 2008; Kenstowicz and Louriz 2009; Kim 2009).

Finally, Boersma and Hamann (2009) have proposed that many loanword adaptations correspond to the processing of the first language (the L1) (Boersma 1998, 2007, 2009). This process becomes bidirectional in that it involves both the listener (on the left below) and the speaker (on the right below).

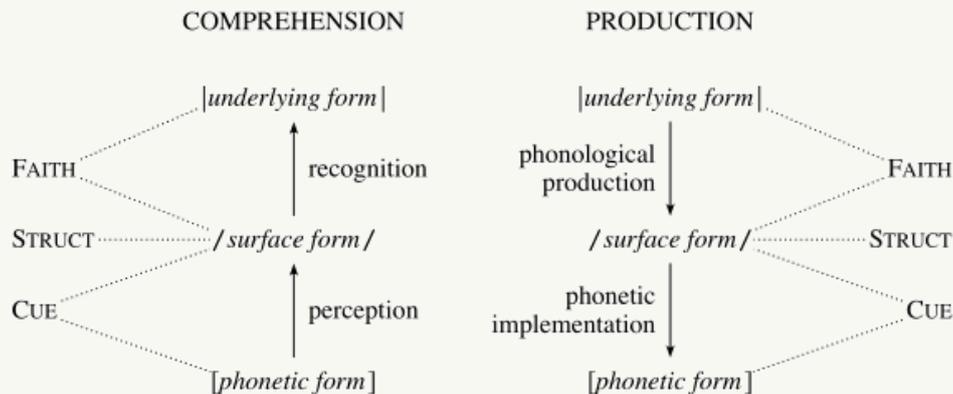


Figure 1: The L1 adaptation of loanwords processing model (Boersma and Hamann, 2009, p. 1)

This model suggests that the phonological production (top right of the diagram) results from an interaction between the structural constraints and the faithfulness constraints (McCarthy and Prince, 1995). These interactions require that the phonology of the output-lexicon (the surface form) remain as close as possible to the input-lexicon (the underlying form) (Prince and Smolensky, 2004) prior to the final implementation of the talk as a loanword that phonetically resonates with the given language. Perception (the bottom left) results from an interaction between the structural constraints and the cue constraints (Boersma, 2007, 2009). McCarthy and Prince found that one set of constraints appears in the expression of the word recognition process (the top left) and one set appears in the expression of the phonetic implementation (the bottom right) process (Boersma and Hamann, 2009).

### Consonant Adaptation in the Borrowing Process

At this point, we consider a prevalent view of the adaptation process during lexical borrowing, in order to better conceptualize lexical borrowing. This view holds that the transfer of words from the donor to the target language recognizes both the borrowing of these words by monolinguals with little or no proficiency of the donor language and the native like absorption of words by bilinguals with high proficiency in both languages. Here, both an accurate and an imperfect phonological competence emerge to impede lexical acquisition. Here, non-nativelike bilinguals with imperfect phonological competence may accurately reproduce some structures of the donor language while at times also differentiating and failing to accurately produce others. At times, phonemes in the donor

language have identical counterparts and hence IPA symbols in the target language. For both nativelike and non-nativelike bilinguals, these consonant sounds with identical IPA symbols across both languages pose no significant acquisition difficulty in the adaptation of phonological accuracy. However, these sounds may effect a difficulty in acquisition when appearing in a position which, in comparison to that of the source language, is unusual and hence, at times when the use of these sounds does not agree with the borrower's L1 structure distribution in the target language (Aktürk-Drake, 2015; Flege, 1992).

Each language exhibits its own characteristic structure, to set it apart from other languages. Yet, at times two or more languages complement each other, in which instance, to thus facilitate consonant adaptation and borrowing processes for speakers. Yet, problems in talk and comprehension of talk arise at times when interlocutors perceive the consonantal sequence of the donor language differently to that of the recipient language. A degree of perceptual distortion in consonant adaptation correlates with syllable structure and consonantal contact constraints. For example, native speakers of the South Korean language may experience a perceptual epenthesis when speaking English. Here, the South Korean language contains two main phonotactic restrictions: (1) “syllable structure restrictions that prohibit the occurrence of certain consonants in coda position (e.g., \*[c.], \*[g.]), while allowing others (e.g., [k.], [l.]);” and (2) “consonantal contact restrictions that ban [or modify] the co-occurrence of certain heterosyllabic consonants (e.g., \*[k.m]; \*[l.n]) due to various phonological processes that repair such sequences on the surface (i.e., /k.m/ → [ŋ.m]; /l.n/ → [l.l])” (Kabak and Idsardi, 2007, p. 23). This explanation corresponds to Dupoux et al’s (1999) study that points out that listeners frequently perceive epenthetic vowels within consonantal sequences to thus contradict new L1 phonotactics.

## Methodical Framework

In this study, we explore the integration of loanwords from Bahasa Indonesia into four different dialects of Acehnese: North Acehnese, Pidie, Greater Acehnese, and West Acehnese. We documented the data as fieldwork in Aceh, which is the northernmost province in Indonesia, and where most people speak one of the dialects of Acehnese. During the fieldwork, we interact with four native speakers of Acehnese, each from a different dialect background, and selected on the basis of their language knowledge of an Acehnese dialect, and thus as representative of that dialect. All four participants held posts at a state university in Banda Aceh, either as faculty or as students, and all spoke both their dialect and standard Bahasa Indonesian.

We sought to collect the data by appropriating field linguistic methods as suggested by Liebenberg (2019). In addition to the interaction through discussion (Carr et al. 2019), we asked the informants to read aloud a pre-prepared list of 285 loanwords as they would be pronounced in their dialect of Acehnese. Largely owing to limited research investigating bahasa Indonesian loanwords in Acehnese, we constructed the list by considering well-

established Malay/Indonesian loanwords most commonly found in contemporary Acehnese. We did not include suspected cognates in the list, though it is difficult to distinguish with precision the difference between loanword and cognate at times when the languages are so genetically related. We audio recorded all readings on a Tascam DR-100 recording device, commonly employed in phonetics research, such as in Haley et al. (2010), Kehoe and Kannathasan (2021), and Łukaszewicz, Zajbt, and Mołczanow (2020), and we asked informants to repeat the words several times, a technique proposed by Johnson (2014). For comparison, we attempted an exploratory study of a supplementary list of 54 well-known frequently used loanwords of English origin, most pertaining to technologies. Examples include komputer 'computer,' sken 'scan,' aplod 'upload,' and beŋ~beŋ 'bank,' which we recorded from each of the informants in both Acehnese and bahasa Indonesian.

We analysed the data by first including a precise auditory scrutiny of the recordings prior to the use of any software. Here, we compared all phonemic transcriptions with their matching lexical items in bahasa Indonesia. For the analysis, we drew on the qualitative approach proposed by Miles, Huberman, and Saldaña (2014), an approach requiring that the analyst begins with the data collection, after which the following three stages follow, a) data condensation, b) data display, and c) conclusion or verification of the interpretation of the results. The data condensation phase requires a grouping of consonants with relation to each correspondence. In the data display phase, the consonant changes in each interaction were presented in figures with different colours to mark the manner and degree of integration with the speaker's native language. Here, through a grounded theory approach, we drew conclusions as to the patterns of consonant integration into the four dialects of Acehnese. Those such as Budasi, Satyawati, and Aggayana (2021), and Mulyadi, Yusuf, and Siregar (2021), have recommended this analysis technique for studies in linguistics.

## Results

### *In General*

Acehnese and Indonesian both belong to the Malayo-Chamic branch of the Austronesian language family. However, Acehnese phonology is much more complex than Indonesian phonology, particularly in relation to its vowel inventory, while the dialects of Acehnese exhibit much more diversity. Yet, as most of the Indonesian population speak bahasa Indonesia, at times as a second language, considerable variation appears at the phonetic level, an influence predicated on the substrate language of the speaker.

Native Indonesian phonology has four places of articulation with voiced and voiceless stops, and nasals at all four places, only two fricatives (s and h), two glides, and a single lateral and rhotic. Under sustained influence from Arabic, Dutch, and English, bahasa Indonesia has gained additional phonemes, f, v, z, ʃ, x and ʔ (though the word final phonetic glottal is an allophone of /k/ in native Indonesian).

	Bilabial		Labio-dental	Dental	Alveolar		Post-Alveolar	Palatal	Velar		Glottal	
Plosive and affricate	p	b		t		d	tʃ	dʒ		k	g	(ʔ)
Nasal		m				n			ɲ	ŋ		
Flap / Trill						r						
Fricative		w	(f)		s	(z)	(ʃ)					h
Approximant									j			
Lateral approximant						l						

Table 1. Bahasa Indonesia consonant phonemes (Soderberg and Olson, 2008, p. 210)

	Bilabial		Alveolar		Alveolar-palatal		Velar		Uvular	Glottal
Plosive	p	b	t	d	c	j	k	g		ʔ
Fricatives		m	s							h
Nasals				n		ɲ		ŋ	r[ʁ]	
Laterals				l				(ʃ)		
Lateral approximant		w				j				

Table 2. West Aceh and Greater Aceh consonant phonemes (Zulfadli, 2014, p. 143)

The Acehnese consonant phoneme inventory appears as highly similar to bahasa Indonesian, though the articulation of the sibilant is quite different, and several dialects of Acehnese exhibit a uvular rhotic instead of the alveolar trill. Indonesian and Acehnese contain similar consonant phoneme inventories of moderate complexity. Both have few fricatives, just one rhotic, and just one lateral. Iskandar et al. (2020) present some evidence of phonemic correspondences between the Indonesian language and the Acehnese language. We suggest the existence of 19 Indonesian consonant phonemes that correspond to Acehnese consonant phonemes. Such a phonological similarity appears in initial and final consonants, where three of the phonemic correspondences are significantly regular, that is, /s ≈ h, h ≈ Ø, and r ≈ Ø/, while the remainder are sporadic, such as /k ≈ g/. The North Acehnese dialect contains a set of what appear to be funny nasals, in the sense that their sound becomes quite unconventional, similar to a nasal plus homorganic stop cluster, though Durie (1985) and Asyik (1987) analysed these as exhibiting phonemic status. These funny nasals seem devoid of loanword phenomena, and hence, we will not discuss these. The Pidie consonant inventory is similar to that of North Acehnese, whereas the Greater Acehnese consonant inventory aligns with West Acehnese, yet with the exception of the alveolar fricative S, which Durie (1985) presents as a laminal alveo-dental fricative.

	Bilabial		Alveolar		Alveolar-palatal		Velar		Uvular	Glottal
Plosive	p	b	t	d	c	ɟ	k	g		ʔ
Fricatives			S						r[ɸ]	h
Nasals		m		n		ɲ		ŋ		
Funny Nasals		ɱ		ɳ		ɲ̟		ŋ̟		
Laterals				l						
Lateral approximant		w				j				

Table 3. North Aceh consonant phonemes (Asyik, 1987)

More differences arise at the phonotactic level, at which point Acehnese accepts the use of initial consonant clusters (/ph/, /bh/, /th/, /dh/, /ch/, /ʃh/, /kh/, /gh/, /lh/, /rh/) involving /h/ as the second element. Acehnese also accepts a range of initial consonant clusters where the second element becomes a liquid (/pr/, /br/, /tr/, /dr/, /cr/, /ʃr/, /kr/, /gr/, /pl/, /bl/, /cl/, /ʃl/, /kl/, /gl/). Indonesian does not allow most of these clusters, or at best, Indonesian renders these clusters as marginal at best (as in *glas* ~ *gelas* 'glass').

Consonant changes across this correspondence include the substitution of /s/ with /h/, /S/θ/, and the deletion of /s/; the deletion or addition of /h/; the substitution of /h/ with /ʔ/ and the deletion of /ʔ/; the substitution of /f/ and /v/ with /p/; the substitution of /v/ with /f/; the substitution of /p/ and /b/ with /ph/ and /bh/; the deletion of /r/ and /l/; a sporadic /k/ → /g/ and occasional replacement of /ng/ with /n/ and /m/ and one instance of the replacement of /j/ with /ny/. Some of these consonant changes become instances of assimilation (e.g. /ng/ → /m/ prior to the /p/ in *pingpong* or /r/ → /ɸ/ in the West Acehnese and Greater Acehnese dialects). Others (such as the deletion of the final consonants /r/ and /l/) become almost regular and predictable, whereas others (such as the insertion of /h/ between a consonant and a vowel to produce the distinctive Acehnese consonant clusters /ph/, /bh/, /th/, /rh/, /jh/, /kh/) are distortions that invoke consonant clusters that Indonesian does not possess. Many of these consonant changes are subject to phonotactic constraints, where some changes are regular and systematic, some are semi regular, whilst many become one-off changes.

### *The Sibilant s vs S*

The sibilant /s/ in Indonesian is unremarkable: Its distribution is unrestricted, occurring in initial, medial, and final positions in the word, both before and after consonants. By contrast, the corresponding sibilant /S/ in Acehnese, particularly in the Greater Acehnese dialect, is a highly unusual sound that has been described by Durie (1985, p. 12) as a "laminal alveo-dental fricative with a wide channel area." Considerable variation exists in the articulation

of /S/, at times sounding almost like /θ/, and at other times sounding almost like /s/ or /ʃ/ or somewhere in between /θ/ and /s/. This traditional Acehnese sibilant is being replaced by the Indonesian /s/ in the speech of younger Acehnese speakers, but nevertheless is strongly present in the loanword data underpinning this study.

In our sample of 285 words, /s/ in Indonesian is often preserved (51 instances in total), particularly in initial and medial position. There are several instances of preservation of the final /s/, that is, in Perancis 'France' (restricted to the North Aceh and Greater Aceh dialects), harus 'must' (restricted to the North Aceh and Pidie dialects), in es 'ice,' in Kamis 'Thursday,' in kaos 'shirt,' in pas 'fit, pass (travel document)' putus 'broken off' or severed. The final /s/ is not permitted in Acehnese (Zulfadli, 2015) and becomes /h/ in most instances across all dialects (31 instances in all). As such, the rule /s#/ -> /h/ is phonologically motivated. We found two instances in the Pidie dialect in which the final /s/ is simply deleted and not replaced by /h/. On phonotactic grounds, the description of such a phenomenon becomes somewhat arduous, that is, the preservation of the final /s/ in harus, Kamis, kaos and putus, but the deletion of the final /s/ in kumis 'moustache' and kakus 'toilet' in the Pidie dialect. In 29 instances /s/ becomes /S/, and in 34 instances, /s/ becomes /θ/ in initial and medial positions (but never in word final position). This phenomenon occurs often in West Acehnese and Greater Acehnese, but less often in Pidie and very rarely in North Acehnese. /S/ and /θ/ are probably in free variation. All four dialects appear to behave in the same way for 50% or more instances of /s/, /S/, and /θ/ in both initial and medial positions.

	North Aceh	West Aceh	Greater Aceh	Pidie
Initial s	17	5	1	18
Medial s	23	7	10	13
Initial S	1	11	2	-
Medial S	3	12	8	9
Initial θ	-	5	15	3
Medial θ	1	6	9	12

Table 4: Occurrence of sibilants in initial and medial positions across the four Acehnese dialects using Indonesian loanwords

### *The Uvular Rhotic*

In the West Aceh and Greater Aceh dialects, the uvular rhotic ʁ replaces the Indonesian rolled /r/. This substitution becomes fully regular and systematic, in line with the phonology of the West Aceh and Greater Aceh dialects (see Zulfadli, 2015). Rhotics are sporadically deleted at times when they precede a consonant. During borrowing from bahasa Indonesian, the rhotic is deleted in all dialects in two instances, is retained across all dialects in six instances, and is deleted in some dialects and not others in six instances (slightly more often

in West Aceh and Greater Aceh). Yet the distinguishing of the phonological environments governing the deletion process and mechanisms becomes arduous. In just one case, *gerobak* 'horse cart,' the intervocalic /r/ is deleted, but this only occurs in the Greater Aceh dialect.

### *The Phoneme /h/*

During the loanword process from bahasa Indonesian to the Acehnese dialects, the phoneme /h/ is preserved, but to varying degrees, in all word positions; always in medial position, mostly in final position and on just four occasions in word initial position in some dialects, but this may be predicated on the process of Indonesian hypercorrection, that is, the hypercorrection of the aspirant. The initial /h/ is deleted in all 10 h-initial Indonesian loanwords, and almost always deleted in West Acehnese and Greater Acehnese, but is preserved in three words in Pidie and in four words in the North Aceh dialect. In addition, h is introduced in two words *gua*>*guha* 'cave' and *kue*>*kueh* 'cake' in all dialects, and is also sporadically introduced in between a consonant and a vowel. The possibility of the introduction of the /h/ in this environment is unpredictable.

### *The Glottal Stop*

During borrowing of words from bahasa Indonesian into all four discussed Acehnese dialects, speakers introduce or insert the glottal stop between vowels in the words *jauh* 'far,' *lain* 'other,' and *laut* 'sea,' but not in *kaum*, 'community; social class,' *bau* 'smell; odour,' *kaos* 'sock, singlet,' and *luas* 'wide, extensive.' We can observe a final glottal in for example, *raya* 'great,' but not in *kebaya* 'traditional female upper garment.' This applies to all of the dialects discussed, with the exception of that of Greater Aceh, where *raya* becomes  $\text{ɾajɛə}$ . It is somewhat arduous to locate or to develop a phonological motive for the differential treatment of these words. One question we can thus, at this stage, pose is whether this presents some evidence for the /au/ in *jauh* and *laut*, and the /ai/ in *lain* as a sequence of vowels, rather than true diphthongs, in bahasa Indonesian.

### *Voicing #k -> g*

A majority of the time, the initial k at the lexical level remains unchanged across all four dialects. However, five words appear with a voiced initial stop; *kaca* 'glass,' *kaki* 'foot; leg,' *kampung* 'village,' *kumpul* 'assemble,' and *kunci* 'key.' No phonological motive appears for this change, which, apart from the word *kampung*, occurs in some dialects and not others.

### *Deletion of Final Liquids*

In the four Aceh dialects in this study, during loan word mechanisms, final liquids frequently disappear. This deletion is always the case in West Acehnese, but there are a several cases in the other dialects discussed where the final liquid is retained: E.g., *rol* 'roll; role' in the

Greater Aceh dialect, *anggur* ‘grapes,’ *kopor* ‘suitcase,’ and *sopir* ‘driver’ in the Pidie dialect only, and *montir* ‘mechanic’ in both the North Aceh and Greater Aceh dialects. The very few cases where the final liquids are retained by only some speakers, are possibly owing to the emergence of unassimilated or only partially assimilated loans from bahasa Indonesian.

### *Labial Fricatives*

In bahasa Indonesian, /f/ and /v/ are introduced phonemes originating from the Arabic, Dutch, and English languages. These sounds are similarly foreign in the Acehnese dialects. The phonemes /f/ and /v/ are at times maintained in Acehnese, yet they are also replaced by the bilabial stop /p/, particularly in the dialects of West Aceh, Greater Aceh and Pidie.

### *One-off Consonant Substitutions*

A sizable series of one-off consonant substitutions and additions also occurs within the data set collected from the four dialects of Aceh in this study. Invariably, these consonant substitutions are difficult or even impossible to predict, as they occur in environments similar to those where no change occurs. We present a list of one-off sound changes between Indonesian and the Acehnese dialects in Table 5 below.

	Indonesian	North Aceh	Greater Aceh	Pidie	West Aceh
#b→∅ (in <i>bibi</i> → <i>ibi</i> )	<i>Bibir</i> ‘lips’	<i>bibi</i>	<i>ibi</i>	<i>ibi</i>	<i>bibi</i>
#k→h (in <i>kamis</i> → <i>hameh</i> )	<i>Kamis</i> ‘Thursday’	<i>ameh</i>	<i>ameh</i>	<i>hameh</i>	<i>ameh</i>
#k→∅ (in <i>kaki</i> → <i>aki</i> )	<i>Kaki</i> ‘foot’	<i>gaki</i>	<i>aki</i>	<i>aki</i>	<i>gaki</i>
#g→∅ (in <i>gigi</i> → <i>igɔ</i> )	<i>Gigi</i> ‘tooth’	<i>gigɔ</i>	<i>igɔ</i>	<i>igɔ</i>	<i>igɔ</i>
z→s/S (in <i>rezeki</i> → <i>resek</i> )	<i>Rezeki</i> ‘sustenance’	<i>resek</i>	<i>reSek</i>	<i>resek</i>	<i>reSek</i>
∅→h /V_V (in <i>gua</i> → <i>guha</i> )	<i>Gua</i> ‘cave’	<i>guha</i>	<i>guha</i>	<i>guha</i>	<i>guha</i>
∅→h /V_# (in <i>kue</i> → <i>kueh</i> )	<i>Kue</i> ‘cake’	<i>kueh</i>	<i>kueh</i>	<i>kueh</i>	<i>kueh</i>
ŋ→m (in <i>pingpong</i> → <i>pimpon</i> )	<i>Pingpong</i> ‘pingpong, table tennis’	<i>pimpon</i>	<i>pinpon</i>	<i>pimpon</i>	<i>pimpon</i>
n→l (in <i>menantu</i> → <i>mulintɛ</i> )	<i>Menantu</i> ‘son/daughter in law’	<i>mulintɛə</i>	<i>mulintɛ</i>	<i>mulintɛ</i>	<i>mulintɛ</i>
j→ɲ (in <i>majat</i> → <i>maɲɛt</i> )	<i>Mayat</i> ‘corpse’	<i>majɛt</i>	<i>maɲɛt</i>	<i>majɛt</i>	<i>majɛt</i>

Table 5. One-off sound changes between Indonesian and other Acehnese dialects

	Bilabial	Aspirated	Dental	Alveolar	Palatal	Velar	Uvular	Glottal
Plosive and affricate	p	b ph bh	(f) (v)	t d	c ʃ	k g		ʔ
Nasal		m		n	ɲ	ŋ		
Rhotic		rh		r			R	
Fricative		(f)	s	(s) (z)				h
Lateral				l				
Glide		w			j			

Key:  
 Dark Blue arrow indicates a regular substitution  
 Red arrow indicates a frequently occurring, but not regular, substitution  
 Magenta arrow indicates an infrequent substitution

Table 6: Participants’ reported use of plain forms and *bikago*

In just ten instances in all of four Acehese dialects, the distinctive Acehese consonant clusters /ph/, /bh/, /th/, /jh/, /kh/, and /rh/ appear in loanwords, sometimes as a direct result of the emergence of an epenthetic /h/, as in ban ‘tyre’ becoming the word bhan, or as a result of the deletion of the intervening vowel between the consonant and /h/, as in the word pahit ‘bitter.’ The latter is significantly predictable. In every perceivable instance of the occurrence of an intervocalic /h/ in bahasa Indonesian, the preceding vowel becomes deleted. However, the insertion of /h/ after the initial or medial consonant is rare and sporadic without an identifiable phonological environment. As such,

∅-> h /C\_V in ban ->bhan (all dialects except West Acehese); bor ->bho (West Acehese but not others)

	Bilabial	Dental	Alveolar	Palatal	Velar	Uvular	Glottal
Stop (vl)	p	f	t	c	(k)		(ʔ)
Stop(vd)	(b)	v	d	ʃ	(g)		
Fricative		s	s			ʁ	h (h)
Nasal	m	n	ɲ	(ɲ)			
Lateral		l					
Rhotic		r				ʁ	
Glide	w		j				

Key:  
 Deleted consonants  
 Inserted consonants

Table 7. Deleted and inserted consonants

## Discussion

Above we have discussed that some of the sound changes that occur at times when bahasa Indonesian loanwords enter into the four Acehnese dialects considered are largely influenced by a process of assimilation. This process is certainly true in the case of the uvular rhotic that replaces the trill or rolled /r/ in the West Acehnese and Greater Acehnese dialects. Such a sound change is regular, whereas several other sound changes, such as the deletion of the final /s/ are in response to phonotactic constraints imposed by any of the Acehnese dialects.

Whilst we can account for some of the changes by employing well-motivated phonological explanations, we are left with the inescapable conclusion that some of the phoneme substitutions and additions are sociophonetic in character. Throughout the study, including the data collection period and process, and the data analysis and discussions amongst ourselves, as well as throughout our ethnographic tenure, we observed many sociophonetic changes amongst the vowels and the introduction of the phoneme /u/, which is not found in Bahasa Indonesia (Aziz et al., 2021). Among the consonants, numerous sporadic changes appear which are unmotivated. The occasional, sporadic epenthetic /h/ following a stop that serves to produce the distinctive Acehnese /ph/, /bh/, /th/, /jh/, /kh/, and /rh/ consonant clusters is another change which seems not to be phonologically motivated but which concurrently serves to make a statement of identity.

Observing the results of this study, we see that a number of changes in phonological character occur in loanword consonants that begin in bahasa Indonesian and that then migrate to, in this case, Acehnese words. Most changes tend to correspond with consonants towards the front of the word. These changes occur with phonotactically restricted consonants in Acehnese, such as the word final /r/ or /s/, a process that is not allowed in the Acehnese dialects. Therefore, these elements are either deleted ( $r > \emptyset$ ) or weakened ( $s > h$ ). We expect these shifts because such changes commonly appear in loanwords in other languages such as English loanwords in South Korean (Kabak and Idsardi, 2007), Chinese Hokkien loanwords in bahasa Indonesian (Aryanti, 2021), English loanwords in Arabic (Al-Athwary, 2017), and English loanwords in Fijian (Kenstowicz, 2007).

Further analysis reveals that phonotactically restricted consonants assimilate with the nearest consonants, with respect to place of articulation, and consonants towards the front are preferred unless the rear consonants are the nearest or unless there are no phonotactically restricted front consonants expressed through the same manner of articulation. In our data, the majority of the consonants are fronted, while only several of these consonants change to become more back consonants, as appearing in Egyptian Arabic (Hafez, 1996) and in South Korean (Tranter, 2000). In addition, in one case, the consonant conversion involves assimilation of manner of articulation; in manyit /majit/ > manyet /majit/ 'corpse.' One possible explanation for this is that the consonant /j/ is an alveo-

palatal glide, and there is no other glide proximal to this in Acehnese, thus the change in manner of articulation is more preferred, and /ɲ/ thus becomes the closest in terms of manner. This type of consonant adaptation has also been found in Hadhrami Arabic loanwords (Bahumaid, 2015).

In our data analysis, we also encountered results unexpected from our early interpolations. Firstly, most consonants assimilate with place of articulation and some with manner of articulation. However, there is only one case where the velar stop /k/ changes to a glottal fricative /h/, that is, in *kamis* > *hameh*. This change seems to appear very randomly, and it cannot yet be explained largely owing to the limited cases in which it appears. A more comprehensive study involving such change is required in order to possibly draw a confident conclusion. Another unexpected result is the voicing of the velar stop /k/ to /g/. This case appears in at least three words, that is, *kaki* > *gaki* 'leg,' *kampung* > *gampong* 'village,' and *kumpul* > *gumpoi* 'gather.' However, a more detailed analysis offers a reasonable explanation for this unusual case. The three words, although suspected of being loanwords, are native to Acehnese, as they constitute basic nouns and one verb, such as *gaki* 'leg;' no other words (either obsolete or archaic) correspond with these nouns or one verb. Finally, for the case of velar nasal /ŋ/ changing to /m/, which is significantly distant from /ŋ/, the occurrence of the change suggests that this phenomenon results from a morphophonemic process, where /pingpong/ /piŋpɔŋ/ is realised as /pimpɔŋ/. Here, the occurrence of the assimilation process becomes quite apparent, and in which the velar nasal assimilates with the bilabial stop /p/ in terms of place of articulation.

## Conclusion

This study has revealed some significant findings on Indonesian loanwords in Acehnese dialects, and in particular with respect to phonological adaptation. However, the generalizability of this study is somewhat problematic. The size of the interactant sample set is rather small, a limitation which inhibits the analysis from uncovering an extensive number of unique findings. With a larger sample size, we will be in a position to identify the patterns of such changes to a much greater extent, and we will thus have the data to develop more comprehensive descriptions. In addition, we did not subject the wordlists that we employed in any tryout phase or through a pilot study, a limitation which may have significantly impacted on the outcome of the study, to thus contribute to the occurrence of unexpected results.

Undoubtedly, the Indonesian loanwords considered in this study entered into Acehnese prior to the 2004 tsunami and to the cessation of the war of independence waged by the Free Aceh Movement (GAM), and hence when Acehnese was dominant. Anthropologically, the set of loanwords under study in this paper, and the sound changes they embody, seem to constitute an act of Acehnese identity, as most cannot be accounted for, as a result of phonological assimilation or another regular phonologically motivated process.

Bahasa Indonesia appears to be the undisputed dominant language of the younger generation, especially in Banda Aceh and other urban centres. Malay/Indonesian loanwords are still flooding into Acehnese as new technologies, such as IT, social media, mobile phones and so on are being adopted by Acehnese people. A preliminary study of these loanwords reveals that there is no difference in the way that an individual pronounces them in Acehnese and Indonesian, despite an considerable variation across different speakers. More recent Indonesian loanwords do not seem to be subject to the same sound changes that are attested in this data. The words under study here thus appear to belong to a particular period in time when words underwent phonetic changes as they were adopted into Acehnese.

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