

## SYLLABLE STRUCTURES OF IDENTICAL COGNATES SHARED BY INDONESIAN AND MALAY DIALECTS

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### ABSTRACT

Indonesian, the national language of the Republic of Indonesia, is a language code derived from a standard variation of Malay, i.e. Riau Malay. Meanwhile, there are many other dialects of Malay spoken in many places in the Republic of Indonesia. Bangka, Banjar, Deli, Jambi, Kerinci, Langkat, Minangkabau, and Palembang, are, at least, language codes becoming the major dialects of Malay. Since Indonesian and Malay dialects are derived from the same ancestor language, i.e. Proto-Austronesian, there are cognates shared by the language codes: both the identical and the non-identical ones. This article investigates the phonological aspects of the cognates, especially the identical ones. The cognates are obtained from (1) lexical items becoming entries in dictionaries of Malay dialects above-mentioned and (2) Indonesian lexical items in *Kamus Besar Bahasa Indonesia*, i.e. the phonological forms of which are identical with the phonological forms of Malay-dialects lexical items. Therefore, the data corpora for this investigation are the phonological forms of the cognates. The phonological forms of the cognates are determined by referring to (1) the phonological forms of lexical items which are already available in the dictionaries of Malay dialects and (2) rules of grapheme-phoneme correspondences in Indonesian proposed by Hasan (2013) & Fauzi (2015). The distribution of segments (consonants, vowels, and diphthongs) and the distribution of length (as one of suprasegmental features) in the identical cognates shows patterns of syllable structures. The patterns of syllable structures show phonotactic constraints, i.e. the ones which are related to the phonotactic rules of every Malay dialect involved in this investigation.

**Keywords:** *identical cognates, syllabic structures, phonotactic constraints*

### INTRODUCTION

Indonesian (**ID**), the national language of the Republic of Indonesia, is a language code derived from Riau (**RI**), i.e. a standard variation of Malay. There are many dialects of Malay (**MD-s**) spoken in many places in Indonesia. The MD-s are widely spread: from Sumatra (an island in which Tamiang, the west-most MD, is spoken) to Papua (an island in which Papuan, the east-most MD, is spoken) and from Sulawesi (an island in which Manado, the central-north-most MD, is spoken) to Timor (an island in which Kupang, the south-most MD, is spoken).

In Sumatra, besides RI, at least, there are Bangka (**BG**), Deli (**DL**), Jambi (**JM**), Langkat (**LK**), Minangkabau (**MK**), Palembang (**PL**), becoming the major MD-s. Meanwhile, Banjar (**BJ**) is an MD with the most speakers in Borneo, i.e. one of the main islands situated in the central part of Indonesia (Djantera, 2011; SIL, 2006). Furthermore, Djantera explains that, as the consequence of exodus of Banjarese people to some places in Indonesia (also to some places in Malaysia) happened hundred years ago, Banjar is also spoken in Indragiri Hilir (an area in Riau, Sumatra).

Since ID and the MD-s are derived from the same ancestor language, i.e. Proto-austronesian, there are cognates shared by the language codes (Djantera, 2011). The term *cognate* refers to a form of cross-language lexical items that has semantic and phonological similarities. Referring to Djikstra et al. (2010), there is a dichotomy of cognate types: *identical cognates* versus *non-identical cognates*. An identical cognate is the same phonological form shared by two or more language codes and refers to the same referent. Meanwhile, a non-identical cognate is a pair or a set of phonological forms across language-codes showing a (some) particular phonological alternation(s). However, despite the alternation(s) or the difference(s) in the phonological forms, the word-forms becoming the non-identical cognate still refer to the same referent.

Dealing with the phonological aspect of lexical items, there is a notion of *syllable* and *syllable structure*. The discussion of syllable structure involves segment(s) becoming onset, i.e. a consonant (**C**) or a cluster of C-s occurring at the initial position of a syllable and segment(s) becoming coda, i.e. C or

a cluster of C-s occurring at the final position of a syllable. Furthermore, the discussion also involves a vowel (V) or a diphthong (D) becoming the nucleus of a syllable.

A syllable consisting of onset and nucleus is called *an open syllable*; and a syllable consisting of onset, nucleus, and coda is called *a closed syllable*. A word consisting of one syllable is called *monosyllabic word*; a word consisting of two syllables is called *disyllabic word*; and a word consisting of three syllables is called *trisyllabic word*. A disyllabic word consists of initial syllable and final syllable. Meanwhile, besides initial syllable and final syllable, a trisyllabic word also contains *penultimate*, i.e. a syllable occurring before final syllable. In a word consisting of more than three syllables, the syllable occurring before the penultimate is called *ante-penultimate*.

The discussion of syllable structure also involves the notion of *phonotactics*. The notion is explained by Celata & Calderone (2015) as a set of rules that regulates the possibility of certain segments – C, V, and D – to occur with other segments in a syllable. In addition, the occurrence of suprasegmental features in a syllable also seems to be regulated by the phonotactics.

This article investigates the phonological aspects of the cognates shared by ID and the MD-s above-mentioned, i.e. the major MD-s spoken in Sumatra. The investigation will discuss the syllable structures of the identical cognates. Sound alternations in non-identical cognates in certain MD-s, that are considered to become phonotactic constraints in syllable structures, become part of discussion.

## METHODOLOGY

The cognates investigated in this article are obtained from lexical items becoming entries in dictionaries of major MD-s in Sumatra (eight MD-s mentioned in the previous section) and ID lexical items becoming entries in *Kamus Besar Bahasa Indonesia*, i.e. the phonological forms of which are identical with the phonological forms of lexical items of MD-s. BG lexical items are obtained from Surya & Rahma (2021); BJ lexical items are obtained from Abdul (1997); DL lexical items are obtained from Hayati et al. (1985) and Nasution et al. (2018); JM lexical items are obtained from Yulisma et al. (1997) and Yulisma et al. (1998); LK lexical items are obtained from Masinda et al. (1985) and Nasution et al. (2018); MK lexical items are obtained from Abdul (2002) and Syamsarul (2013); PL lexical items are obtained from Dian et al. (2021); and RI lexical items are obtained from Lubis et al. (1997).

The data corpora for this investigation are the phonological forms of the cognates. Some phonological forms of the identical cognates refer to the phonological forms of lexical items which are provided in the dictionaries of MD-s above-mentioned. *Kamus Besar Bahasa Indonesia* and some of the dictionaries of MD-s above-mentioned do not provide any phonological forms of the lexical items. Therefore, the phonological forms of the cognates are determined by referring to the rules of grapheme-phoneme correspondences in ID proposed by Hasan (2013) & Fauzi (2015).

Segments being analyzed involve C-s, V-s, and D-s. The C-s comprise fortis C (FC) and lenis C (LC). The V-s comprise tense V and lax V. Referring to Fauzi (2018), there two types of D-s, i.e. (1) the ones in forms of a V followed by an approximant, e.g. /ɛj/, /əw/, /ʌj/, /ʌw/, or /ɔj/ and (2) the ones in forms of a cluster of two V-s with a glide (/ʷ/ or /ʝ/) in it, e.g. /ɪʝʌ/, /ɛʝʌ/, /ɛʷʊ/, /ʊʷɪ/, and /ʊʷʌ/.

The description of syllable-structure patterns involves identical cognates shared by ID and eight MD-s, i.e. BG, BJ, DL, JM, LK, MK, PL, and RI. The description also involves identical cognates shared by ID and seven MD-s, i.e. the eight MD-s minus one MD. The last mentioned one is the cognate of which is non-identical. The cognate of the last mentioned MD show phonological alternation(s); and the alternation(s) is (are) discussed as the factor(s) of phonotactic constraints found in the distribution of syllable-structure patterns of identical cognates shared by ID and eight MD-s.

## ANALYSIS

### 1. Syllable Structures

The distribution of segments in identical cognates shows patterns of syllable structures. Table 1 and Tables 2a – 2d below show the distribution of the syllable structures of identical cognates shared by ID and eight MD-s. Table 1 shows the distribution of the syllable structures in monosyllabic identical cognates, while Tables 2a – 2d show the distribution of the syllable structures in disyllabic identical

cognates. For the sake of efficiency, labels of V-s are abbreviated in the following tables, i.e. f = front, c = central, b = back, h = high, m = mid, and l = low.

**Table 1. Monosyllabic identical cognate shared by ID and eight MD-s**

cognate and/or syllable structure	onset	V as nucleus						coda
		f		c		b		
		h	m	m	l	h	m	
(1a) C-V	-	-	-	-	-	-	-	
/pʌs/ 'fit/exact' (1.b.1) FC-V-FC	plosive				√		fricative	
(1b.2) FC-V-LC	-	-	-	-	-	-	-	
/mʌʔ/ 'mother' (1.b.3) LC-V-FC	nasal				√		plosive	
/bʌn/ 'tire'	plosive				√		nasal	
/ʝʌm/ 'hour/time' (1.b.4) LC-V-LC	plosive				√		nasal	

No open monosyllabic identical cognate is found. Every monosyllabic identical cognate is in the form of a closed syllable. Plosives dominate the onsets; and nasals dominate the codas. Only lax-central-low V is found to occur as the nucleus of every monosyllabic word.

**Table 2a. Disyllabic identical cognate with open initial and final syllable shared by ID and eight MD-s**

cognate and/or syllable structure	initial syllable						final syllable									
	onset	V as nucleus						coda	onset	V as nucleus						coda
		f	c		b		f			c		b				
h	m	m	l	h	m	h	m	m	l	h	m					
(2a.1) C-V.C-V	-	-	-	-	-	-	-	-	-	-	-	-				
(2a.2.1) FC-V.FC-D	-	-	-	-	-	-	-	-	-	-	-	-				
(2a.2.2) FC-V.LC-D	-	-	-	-	-	-	-	-	-	-	-	-				
(2a.2.3) LC-V.FC-D	-	-	-	-	-	-	-	-	-	-	-	-				
/wʌ.ɫʌw/ (2a.2.4) 'although' LC-V.LC-D	approximant				√		-	lateral		diphthong		-				
(2a.3) C-D.C-V	-	-	-	-	-	-	-	-	-	-	-	-				
(2a.4) C-D.C-D	-	-	-	-	-	-	-	-	-	-	-	-				

Instead of the ones with C-V.C-V, C-D.C-V, and C-D.C-D, only a single identical cognate with C-V.C-D is found as a disyllabic identical cognate with open initial and final syllable.

**Table 2b. Disyllabic identical cognate with open initial syllable and closed final syllable shared by ID and eight MD-s**

cognate and/or syllable structure	initial syllable					final syllable								
	onset	V as nucleus					coda	onset	V as nucleus					coda
		f	c		b				f	c		b		
h	m	m	l	h	m	h	m	m	l	h	m			
(2b.1) FC-V.FC-V.FC	-	-	-	-	-	-	-	-	-	-	-	-		
/pʌ.pʌn/ 'board'	plosive			√		-	plosive			√		nasal		
/pʌ.hʌm/ (2b.2) 'understand' FC-V.	plosive			√		-	fricative			√		nasal		
/tʊ.kʌŋ/ (2b.2) 'craftsman' FC-V.LC	plosive			√		-	plosive			√		nasal		
/kʌ.Cʌŋ/ 'bean'	plosive			√		-	plosive			√		nasal		
/ʔʌ.ɫʌt/ (2b.3) tools FC-V.LC-V.FC	plosive			√		-	lateral			√		plosive		
/pʌ.dʌŋ/ 'field'	plosive			√		-	plosive			√		nasal		
/pʌ.ɫʌŋ/ (2b.4) 'cross' FC-V.	plosive			√		-	lateral			√		nasal		
/tʊ.ɫʌŋ/ 'bone' LC-V.LC	plosive			√		-	lateral			√		nasal		
/kʌ.nʌn/ 'right-side'	plosive			√		-	nasal			√		nasal		

/kʌ.wʌn/		plosive	√	-	approximant	√	nasal
'right-side'							
/ʔʌ.ŋɪn/		plosive	√	-	nasal	√	nasal
'wind'							
/ʔʌ.lʌm/		plosive	√	-	lateral	√	nasal
'nature'							
/ʔʌ.wʌn/		plosive	√	-	approximant	√	nasal
'cloud'							
/ʔʌ.jʌm/		plosive	√	-	approximant	√	nasal
'chicken'							
(2b.5) LC-V.FC-V.FC		-	-	-	-	-	-
/dʌ.tʌŋ/	(2b.6)	plosive	√	-	plosive	√	nasal
'arrive/come'	LC-V.						
/lʌ.pʌŋ/	FC-	lateral	√	-	plosive	√	nasal
'spacious'	V.LC						
(2b.7)							
/bʊ.wʌt/	LC-V.	plosive	√	-	approximant	√	plosive
'make'	LC-V.FC						
/bʌ.ŋʊn/		plosive	√	-	nasal	√	nasal
'raise'							
/bʌ.wʌŋ/		plosive	√	-	approximant	√	nasal
'onion'							
/bʊ.jʌŋ/		plosive	√	-	plosive	√	nasal
'bachelor'							
/bʊ.lʌn/	(2b.8)	plosive	√	-	lateral	√	nasal
'moon'							
/bʊ.wʌŋ/	LC-V.	plosive	√	-	approximant	√	nasal
'throw out'	LC-V.LC						
/dɪ.ŋɪn/		plosive	√	-	nasal	√	nasal
'cold'							
/jʌ.lʌn/		plosive	√	-	lateral	√	nasal
'walk; way'							
/jʌ.ŋʌn/		plosive	√	-	nasal	√	nasal
'do not'							
/mʌ.lʌm/		nasal	√	-	lateral	√	nasal
'night'							

Identical cognates listed above show that (1) plosives dominates the onsets of both initial and final syllables, (2) nasals dominates the codas, (3) lax-central-low V dominates the nucleus of both initial and final syllables, and (4) neither front-mid V or back-mid V is found to occur as nucleus of both initial and final syllables.

**Table 2c.**  
**Disyllabic identical cognate with closed initial and open final syllable shared by ID and eight MD-s**

cognate and/or syllable structure	initial syllable					final syllable						
	onset t	V as nucleus				coda a	onset t	V as nucleus				coda a
		f	c	b				f	c	b		
		h	m	m	l			h	m	m	l	
(2c.1) C-V-C.C-V	-	-	-	-	-	-	-	-	-	-	-	-
(2c.2) C-V-C.C-D	-	-	-	-	-	-	-	-	-	-	-	-

No identical cognate with closed initial syllable and open final syllable shared by ID and eight MD-s is found. However, there are some identical syllable structures cognates shared by ID and seven MD-s; and they are discussed in Sub-section 3.

**Table 2d.**  
**Disyllabic identical cognate with closed initial and final syllable shared by ID and eight MD-s**

cognate and/or syllable structure	initial syllable					final syllable							
	onset	V as nucleus				coda	onset	V as nucleus				coda	
		f	c	b				f	c	b			
(2d.1) FC-V-FC.FC-V-FC	-	-	-	-	-	-	-	-	-	-	-	-	-
(2d.2) FC-V-FC.FC-V-LC	-	-	-	-	-	-	-	-	-	-	-	-	-
(2d.3) FC-V-FC.LC-V-FC	-	-	-	-	-	-	-	-	-	-	-	-	-
(2d.4) FC-V-FC.LC-V-LC	-	-	-	-	-	-	-	-	-	-	-	-	-
(2d.5) /ɔɔŋ.kɔs/ 'fare' FC-V-LC. FC-V-FC	plosive				√	nasa l	plosiv e					√	fricativ e
(2d.6) /sʌm.pʌn/ 'boat' FC-V-LC. FC-V-LC	fricativ e				√	nasa l	plosiv e				√		nasal
(2d.7) FC-V-LC.LC-V-FC	-	-	-	-	-	-	-	-	-	-	-	-	-
/pɪŋ.gʌŋ/ 'waist' /pʌn.dʌŋ/ 'roast' (2d.8) /pʌn.ʃʌŋ/ FC-V-LC. LC-V-LC 'long' /tɪm.bʌŋ/ 'balance' /kʌn.dʌŋ/ 'cage'	plosive	√				nasa l	plosiv e				√		nasal
(2d.9) LC-V-FC.FC-V-FC	-	-	-	-	-	-	-	-	-	-	-	-	-
(2d.10) LC-V-FC.FC-V-LC	-	-	-	-	-	-	-	-	-	-	-	-	-
(2d.11) LC-V-FC.LC-V-FC	-	-	-	-	-	-	-	-	-	-	-	-	-
(2d.12) LC-V-FC.LC-V-LC	-	-	-	-	-	-	-	-	-	-	-	-	-
(2d.13) LC-V-LC.FC-V-FC	-	-	-	-	-	-	-	-	-	-	-	-	-
(2d.14) LC-V-LC.LC-V-FC	-	-	-	-	-	-	-	-	-	-	-	-	-
(2d.15) LC-V-LC.FC-V-LC	-	-	-	-	-	-	-	-	-	-	-	-	-
(2d.16) /dʌn.dʌn/ 'dress up' LC-V-LC. LC-V-LC	plosive				√	nasa l	plosiv e				√		nasal

Identical cognates listed above show that (1) plosives dominates the onsets of both initial and final syllables, (2) nasals dominates the codas of both initial and final syllables, (3) lax-central-low V dominates the nucleus of both initial and final syllables, and (4) neither front-mid V or back-high V is found to occur as nucleus of both initial and final syllables.

**2. The Recapitulation of C-Distribution and Phonotactic Constraints**

Based on the distribution of syllable structures listed in Table 1 and Tables 2a – 2d, the following tables show recapitulation of C-distribution in identical cognates shared by ID and eight MD-s. Table 3a recapitulates C-s occurring as onset; and Table 3b recapitulates C-s occurring as coda. The figures displayed in the tables shows the frequency of the occurrence of each C.

**Table 3a. C-s occurring as onset in identical cognates shared by ID and eight MD-s**

	bilabial		labio-dental		alveolar		palatal		velar		uvular		glottal
	fortis	lenis	fortis	lenis	fortis	lenis	fortis	lenis	fortis	lenis	fortis	lenis	fortis
<b>plosive</b>	11	8			4	7	1	5	6	1			6
<b>nasal</b>		2				1				4			
<b>fricative</b>					1								1
<b>trill</b>													
<b>lateral</b>						9							
<b>approximant</b>		6						1					

Table 3a shows that plosive-bilabial-fortis /p/ dominates the onset in identical cognates. Meanwhile, certain C-s are not found to occur at onset. Fricative-labio-dental-lenis /v/ and trill-uvular-lenis /ʁ/ do not belong to ID phonology (Fauzi, 2018); and that is the phonotactic reason why no identical cognate found to have the C-s as onset.

Fricative-labio-dental-fortis /f/, fricative-alveolar-lenis /z/, fricative-palatal-fortis /ʃ/, fricative-uvular-fortis /x/, and trill-alveolar-lenis /r/ belong to ID phonology; but no identical cognates have them as onset. Instead, the data corpora show the following alterations.

- /f/ is altered to plosive-bilabial-fortis /p/ as ID /**f**I.tʌ.mIn/ ‘vitamin’ is altered to /**f**I.tʌ.mIn/ in BG, BJ, MK & PL and as ID /hʌ.**f**ʌl/ ‘memorize’ is altered to /hʌ.**p**ʌl/ in BG, BJ, DL, LK, & PL.
- /z/ is altered to other C-s: (a) to plosive-alveolar-lenis /d/ as ID /nʌ.**z**ʌr/ ‘vow’ is altered to /nʌ.**d**ʌr/ in BJ, (b) to plosive-palatal-lenis /d/ as ID /**z**ʌt/ ‘essence’ is altered to /**J**ʌt/ in BJ & LK, as ID /**z**ʌ.mʌn/ ‘era’ is altered to /**J**ʌ.mʌn/ in BJ, DL, LK, MK, & PL, as ID /**z**ʌm.**z**ʌm/ ‘holly well in mecca’ altered to /**J**ʌm.**J**ʌm/ in DL & LK, and as ID /ʔI.**z**In/ ‘permit’ is altered to /ʔI.**J**In/ in DL, LK, MK, PL, & RI, (c) to lateral-alveolar /l/ as ID /**z**ʌ.hʊr/ ‘Muslim midday-prayer time’ is altered to /**l**ʌ.hʊr/ in BJ, and (d) to fricative-alveolar-fortis /s/ as ID /**z**i.na:/ ‘adultery’ is altered to /**s**i.na:/ in MK and as ID /ʔʌ.**z**ʌn/ ‘Muslim prayer-call’ is altered to /ʔʌ.**s**ʌn/ in MK.
- /ʃ/ is altered to is to fricative-alveolar-fortis /s/ as ID /**ʃ**ʌʔ/ ‘doubt’ is altered to /**s**ʌʔ/ in BJ, LK, & MK, as ID /**ʃ**ʌ.hʌ.dʌt/ ‘creed’ is altered to /**s**ʌ.hʌ.dʌt/ in BJ, DL, LK, & MK, as ID /ʔI.**ʃ**ʌ.rʌt/ ‘sign’ is altered to /ʔI.**s**ʌ.rʌt/ in BJ & MK, and as ID /ʔI.**ʃ**ʌʔ/ ‘Muslim evening-prayer time’ is altered to /ʔI.**s**ʌʔ/ in BJ & RI.
- /x/ is altered to other C-s: (a) to plosive-velar-fortis /k/ as ID /**x**I.jʌ.nʌt/ ‘betrayal’ is altered to /**k**I.jʌ.nʌt/ in LK, PL & RI, as ID /na.**x**o.da:/ ‘captain’ is altered to /na.**k**o.da/ in LK, and as ID /ʔI.**x**ʌs/ ‘sincere’ is altered to /ʔI.**k**ʌs/ in MK, PL, & RI, (b) to plosive-glottal-fortis /ʔ/ as ID /**x**ʌ.jʌ/ ‘imagine’ is altered to /ʔʌ.jʌl/ in JM, and (c) to fricative-glottal-fortis /h/ as ID /**x**ʌ.tʌm/ ‘finished’ is altered to /**h**ʌ.tʌm/ in BJ, DL, & LK.
- /r/ is altered to other C-s: (a) to plosive-bilabial-lenis /b/ as ID /ʔʌ.**r**ʌh/ ‘direction’ is altered to /ʔʌ.**b**ʌh/ in MK, (b) to plosive-palatal-fortis /J/ as ID /**r**ʊm.bʌj/ ‘fringe’ is altered to /**J**ʊm.bʌj/ in DL, LK, & RI, (c) to plosive-glottal-fortis /ʔ/ as ID /**r**I.ŋʌn/ ‘light’ is altered to /ʔI.ŋʌn/ in BG & MK, (d) to trill-uvular-lenis /ɣ/ as ID /**r**ʊh/ ‘spirtit’ is altered to /**ɣ**ʊh/ in DL, JM, & LK, as ID /**r**ʌ.tʊs/ ‘hundred’ is altered to /**ɣ**ʌ.tʊs/ in DL, JM, LK, & PL, ID /**k**ə.**r**ʌn.Jʌŋ/ ‘basket’ is altered to /**k**ə.**ɣ**ʌn.Jʌŋ/ in DL, JM, LK, & PL, and as ID /**k**ə.**r**ʊŋ.ko.ŋʌŋ/ ‘throat’ is altered to /**k**ə.**ɣ**ʊŋ.ko.ŋʌŋ/ in DL, JM, & LK, (e) to lateral-alveolar /l/ as ID /**r**ʌ.<sup>w</sup>ʊŋ/ ‘roar’ is altered to /**l**ʌ.<sup>w</sup>ʊŋ/ in PL, as ID /**s**ə.**r**Im.pəʔ/ ‘get entangled’ is altered to /**s**ə.**l**Im.pəʔ/ in PL, and as ID /**C**ʊ.**r**ʊŋ/ ‘funnel’ is altered to /**C**ʌ.**l**ʊŋ/ in RI, (f) to approximant-bilabial /w/ as ID /ʔʌ.**r**ʌh/ ‘direction’ is altered to /ʔʌ.**w**ʌh/ in MK, (g) to approximant-palatal /j/ as ID /**t**ə.**r**ʊŋ/ ‘egg-plant’ is altered to /**t**I.jʊŋ/ in DL & LK, (h) to glide /<sup>w</sup>/ as ID /**g**ʌ.**r**ʊk/ ‘scratch’ is altered to /**g**ʌ.<sup>w</sup>ʊt/ in JM & PL, and (i) to glide /<sup>j</sup>/ as ID /**t**ʌ.**r**Iŋ/ ‘canine tooth’ is altered to /**s**ʌ.<sup>j</sup>Iŋ/ in DL & LK.

**Table 3b. C-s occurring as coda in identical cognates shared by ID and eight MD-s**

	bilabial		labio-dental		alveolar		palatal		velar		uvular		glottal
	fortis	lenis	fortis	lenis	fortis	lenis	fortis	lenis	fortis	lenis	fortis	lenis	fortis
<b>plosive</b>					2								1
<b>nasal</b>		6				13			12				
<b>fricative</b>					2								
<b>trill</b>													
<b>lateral</b>													
<b>approximant</b>													

Tabel 3b shows that nasal-alveolar /n/ dominates the coda in identical cognates. Meanwhile, certain C-s are not found to occur as coda. As fricative-labio-dental-lenis /v/ and trill-uvular-lenis /ɣ/ do not belong to ID phonology, the two C-s are not found to occur as coda in identical cognates. Dealing with phonotactics, although plosive-bilabial-lenis /b/, plosive-alveolar-lenis /d/, plosive-palatal-fortis /C/, plosive-palatal-lenis /J/, plosive-velar-lenis /g/, and fricative-alveolar-lenis /z/

are phonemes in ID, they can only occur as onset. In other words, they cannot occur as coda (Hasan, 2013). The phonotactics pointed by Hasan becomes the reason why the last-mentioned C-s are not found to occur as coda in identical cognates.

Dealing with other C-s that are not found to occur as coda in identical cognates, the data corpora show the following alternations.

- /p/ is altered to other C-s: (a) to plosive-alveolar-fortis /t/ as ID /sə.lɪp/ ‘insert’ is altered to /sə.lɪt/ in DL & LK, (b) to plosive-velar-fortis /k/ as ID /ʔam.pɪɔp/ ‘envelope’ is altered to /ʔam.pɪɔk/ in BJ, and (c) to plosive-glottal-fortis /ʔ/ as ID /ʔa.Cɔp/ ‘frequent’ is altered to /ʔa.Cɔʔ/ in PL.
- /k/ is altered to other C-s: (a) to plosive-bilabial-fortis /p/ as ID /sə.rʊ.dʊk/ ‘plough’ is altered to /sə.rʊ.dʊp/ in BJ, (b) to plosive-alveolar-fortis /t/ as ID /ʔaŋ.gʊk/ ‘nod’ is altered to /ʔaŋ.gʊt/ in DL, JM, & LK, (c) to plosive-glottal-fortis /ʔ/ as ID /hɔk/ ‘authority’ is altered to /hɔʔ/ in JM, MK, PL, & RI, as ID /dɔk.wa:/ ‘acuse’ is altered to /dɔʔ.wa:/ in JM, LK, MK, PL, & RI, and as ID /bən.tɔk/ ‘rage at’ is altered to /bən.tɔʔ/ in BG, DL, JM, LK, & RI.
- /f/ is altered (a) to plosive-bilabial-fortis /p/ as ID /nɔf.su:/ ‘desire/lust’ is altered to /nɔp.su:/ in BG, JM, LK, MK, & PL and as ID /ʔɪn.sɔf/ ‘realize’ is altered to /ʔɪn.sɔp/ in BJ, DL, LK, MK, & PL and (b) to fricative-glottal-fortis /h/ as ID /ʔa.rɪf/ ‘wise’ is altered to /ʔa.rɪh/ in BG.
- /x/ is altered to fricative-glottal-fortis /h/ as ID /bɔ.lɪx/ ‘puberty’ is altered to /bɔ.lɪh/ in BJ.
- /h/ is altered to other C-s: (a) to plosive-bilabial-fortis /p/ as ID /kʊ.ŋɔh/ ‘chew’ is altered to /kʊ.lɪ.jɔp/ in BJ, (b) to plosive-velar-fortis /k/ as ID /rʊ.wɔh/ ‘abundant’ is altered to /rʊ.wɔk/ in BJ, (c) to plosive-glottal-fortis /ʔ/ as ID /jɔ.tʊh/ ‘fall’ is altered to /jɔ.tʊʔ/ in BG, (d) to nasal-bilabial /m/ as ID /kʊ.ŋɔh/ ‘chew’ is altered to /kʊ.ŋɔm/ in DL, (e) to nasal-alveolar /n/ as ID /pəŋ.gɔ.lɔh/ ‘pole’ is altered to /pəŋ.gɔ.lɔn/ in MK, (f) to trill-alveolar /r/ as ID /lɪm.pɔh/ ‘abundant’ is altered to /lɪm.pɔr/ in BJ, (g) to trill-uvular /ʀ/ as ID /pɔ.ŋɔh/ ‘conceited’ is altered to /pɔ.ŋɔʀ/ in PL,
- /r/ is altered to other C-s: (a) to plosive-alveolar-fortis /t/ as ID /mɔn.cʊr/ ‘shower/fountain’ is altered to /mɔn.cʊt/ in DL & LK, (b) to plosive-glottal-fortis /ʔ/ as ID /bə.sɔr/ ‘big’ is altered to /bə.sɔʔ/ in BG, JM, & PL, (c) to nasal-alveolar /n/ as ID /məɾ.tu.wa:/ ‘parent-in-law’ is altered to /mən.tu.wa:/ in BG, DL, & LK and as ID /lʊ.lʊr/ ‘body scrub’ is altered to /lʊ.lʊn/ in DL (d) to nasal-velar /ŋ/ as ID /tɔ.bɪr/ ‘curtain’ is altered to /tɔ.bɪŋ/ in DL & LK, (e) to fricative-alveolar-fortis /s/ as ID /kɔ.bʊr/ ‘sombre’ is altered to /kɔ.bʊs/ in BJ & PL, (f) to fricative-glottal-fortis /h/ as ID /ʔʊ.jɔr/ ‘utter’ is altered to /ʔʊ.jɔh/ in BJ, and (f) to trill-uvular-lenis /ʀ/ as ID /kəɾ.tɔs/ ‘paper’ is altered to /kəʀ.tɔs/ in DL, JM, LK, & PL and as ID /ʔa.lɪr/ ‘flow/stream’ is altered to /ʔa.lɪʀ/ in DL, JM, LK, & PL, (g) to lateral-alveolar /l/ as ID /ʔɪ.krɔr/ ‘pledge’ is altered to /ʔɪ.krɔl/ in BJ & LK.
- /l/ is altered to nasal-alveolar /n/ as ID /kə.ciɪ/ ‘small’ is altered to /kə.ciɪn/ in MK.
- An approximant occurs as coda is not considered as a single segment. Instead, it is considered as part of D, i.e. the type of D in the form of a vowel followed by an approximant.

Whether or not phonotactics in MD-s refrains the C-s (i.e. discussed in this sub-section) from occurring as onset and/or coda needs further investigation(s). However, the data corpora shows an abundance of non-identical cognates with alternations of those C-s. Some other alternations that seem to be caused by phonotactic constraint are discussed in the following sub-section.

### 3. Other Syllable Structures and Other Phonotactic Constraints

Tables 4a – 4b below show the syllable structures of identical cognates shared by ID and seven MD-s (the eight MD-s minus one MD, i.e the MD with non-identical cognate). Some syllable structures are already described in Sub-section 1; in this sub-section they are marked by √. Meanwhile, some others are not described in Sub-section 1 yet because they are not found in the identical cognates shared by ID

and eight MD-s; and in the table below they are marked by x. The phonological form of non-identical cognate is displayed on the last column of the table.

**Table 4a. Disyllabic identical cognate shared by ID and seven MD-s with open initial and final syllable**

no.	identical cognate	pattern of syllable structure	non-identical cognate
(2a.1.1.1)	/ku.tu:/ 'flea'	(2a.1.1) FC-V.FC-V	BJ: /kʊ.tʊʔ/
(2a.1.1.2)	/ku.ku:/ 'flea'		BJ: /kʊ.kʊʔ/
(2a.1.1.3)	/ko.pi:/ 'flea'		BJ: /kʊ.pɪʔ/
(2a.1.1.4)	/ʔi.si:/ 'content'		BJ: /ʔɪ.sɪʔ/
(2a.1.2.1)	/ta.di:/ 'just before'	(2a.1.2) FC-V.LC-V	BJ: /tʌ.dɪʔ/
(2a.1.2.2)	/ta.li:/ 'string/cord'		BJ: /tʌ.lɪʔ/
(2a.1.2.3)	/ka.mi:/ 'we (exclusive)'		BJ: /tʌ.mɪʔ/
(2a.1.2.4)	/sa.gu:/ 'sago'		BJ: /sʌ.gʊʔ/
(2a.1.3.1)	/ba.tu:/ 'stone'	(2a.1.3) LC-V.FC-V	BJ: /bʌ.tʊʔ/
(2a.1.3.2)	/ma.ti:/ 'dead'		BJ: /mʌ.tɪʔ/
(2a.1.3.3)	/la.ki:/ 'husband'		BJ: /lʌ.kɪʔ/
(2a.1.4.1)	/bu.lu:/ 'fur/feather'	(2a.1.4) LC-V.LC-V	BJ: /bʊ.luʔ/
(2a.1.4.2)	/Ja.di:/ 'become'		BJ: /Jʌ.dɪʔ/
(2a.1.4.3)	/la.bu:/ 'pumpkin'		BJ: /lʌ.bʊʔ/
---	---	(2a.2.1) FC-V.FC-D	---
(2a.2.2.1)	/su.ŋʌj/ 'river'	(2a.2.2) FC-V.LC-D	JM: /su.ŋe:/
---	---	(2a.2.3) LC-V.FC-D	---
---	---	(2a.2.4) LC-V.LC-D	---

**Table 4b. Disyllabic identical cognate shared by ID and seven MD-s with open initial syllable and closed final syllable**

no.	identical cognate	pattern of syllable structure	non-identical cognate
(2b.1.1)	/kɪ.pʌs/ 'fan'	(2b.1) FC-V.FC-V-FC	MK: /kɪ.pɛh/
(2b.1.2)	/kʌ.kʌʔ/ 'elder brother/sister'		BG: /ʔʌ.kʌʔ/
(2b.1.3)	/ʔʊ.pʌh/ 'wage'		PL: /ʔʊ.pa:/
(2b.2.1)	/kʌ.pʌl/ 'ship'	(2b.2) FC-V.FC-V.LC	MK: /ka.pa:/
(2b.2.2)	/kʊ.Cɪŋ/ 'cat'		MK: /kʊ.Cɪʔʌŋ/
(2b.2.3)	/ʔɪ.kʌn/ 'fish'		PL: /ʔɪ.wʌʔ/
(2b.2.4)	/ʔʊ.tʌŋ/ 'debt'		BJ: /hʊ.tʌŋ/
(2b.3.1)	/tʌ.ŋɪs/ 'cry'	(2b.3) FC-V.LC-V.FC	RI: /tʌ.ŋɛs/
(2b.3.2)	/tʊ.lɪs/ 'write'		MK: /tʊ.lɪh/
(2b.3.3)	/ʔʌ.jʌh/ 'father'		PL: /ʔʌ.bʌʔ/
(2b.4.1)	/tʌ.ŋʌn/ 'hand'	(2b.4) FC-V.LC-V-LC	BG: /tʌ.ŋɛn/
(2b.4.2)	/Cɪ.jʊm/ 'kiss'		RI: /Cɪ.jʊm/
(2b.5.1)	/bʌ.wʌh/ 'underside'	(2b.5) LC-V.FC-V-FC	PL: /ba.wa:/
(2b.5.2)	/bʊ.wʌh/ 'fruit'		PL: /bu.wa:/
(2b.5.3)	/bʌ.tʌs/ 'boundary/limit'		BG: /bʌ.tɛs/
(2b.5.4)	/Jʌ.hʌt/ 'wicked'		MK: /Jʌ.hɛʔ/
(2b.6.1)	/bɪ.sʊl/ 'abscess'	(2b.6) LC-V.FC-V-LC	MK: /bɪ.sʊʔʌ:/
(2b.6.2)	/mʌ.kʌn/ 'eat'		BG: /mʌ.kɛn/
(2b.7.1)	/wʌ.Jɪp/ 'obliged'	(2b.7) LC-V.LC-V-FC	MK: /wʌ.Jɪʔ/
(2b.7.2)	/lʊ.dʌh/ 'saliva/spittle'		BG: /lʊ.dɛh/
(2b.8.1)	/dʌ.lʌm/ 'deep; inside'	(2b.8) LC-V.LC-V-LC	PL: /dʌ.lɛm/
(2b.8.2)	/dʌ.ʔʊn/ 'leaf'		BG: /dʌ.ʔʊn/

**Table 4c. Disyllabic identical cognate shared by ID and seven MD-s with closed initial and open final syllable**

no.	identical cognate	pattern of syllable structure	non-identical cognate
---	---	(2c.1.1) FC-V-FC.FC-V	---
---	---	(2c.1.2) FC-V-FC.LC-V	---
(2c.1.3.1)	/pʌŋ.ku:/ 'hold something on lap'	(2c.1.3) FC-V-LC.FC-V	BJ: /pʌŋ.kʊʔ/
(2c.1.3.2)	/kʊn.Cɪ:/ 'key'		BJ: /kʊn.Cɪʔ/
(2c.1.4.1)	/tɪŋ.gɪ:/ 'high'	(2c.1.4) FC-V-LC.LC-V	BJ: /tɪŋ.gɪʔ/
(2c.1.4.2)	/Cʌn.du:/ 'opium'		BJ: /Cʌ.dʊʔ/
(2c.1.5.1)	/lʌm.pu:/ 'lamp'	(2c.1.5) LC-V-LC.FC-V	BJ: /lʌm.pʊʔ/
(2c.1.6.1)	/Jʌn.Jɪ:/ 'promise'	(2c.1.6) LC-V-LC.LC-V	BJ: /Jʌn.Jɪʔ/
---	---	(2c.2.1) FC-V-FC.FC-D	---
---	---	(2c.2.2) FC-V-FC.LC-D	---

---	---	(2c.2.3) FC-V-LC.FC-D	---	---
---	---	(2c.2.4) FC-V-LC.LC-D	---	---
(2c.2.5.1)	/bʌŋ.kʌj/	'dead body of animal'	(2c.2.5) LC-V-LC.FC-D	x JM: /bʌŋ.ke:/
---	---	(2c.2.6) LC-V-LC.LC-D	---	---

Table 4d.

**Disyllabic identical cognate shared by ID and seven MD-s with closed initial and final syllable**

	identical cognate	pattern of syllable structure		non-identical cognate
---	---	(2d.1) FC-V-FC.FC-V.FC	---	---
---	---	(2d.2) FC-V-FC.FC-V.LC	---	---
---	---	(2d.3) FC-V-FC.LC-V.FC	---	---
---	---	(2d.4) FC-V-FC.LC-V.FC	---	---
(2d.5.1)	/sʌŋ.kʊt/	'hook'	(2d.5) FC-V-LC.FC-V.FC	√ BG: /sʌŋ.kʊt/
(2d.6.1)	/Cɪn.Cɪn/	'ring'		BG: /Cɛn.Cɛn/
(2d.6.2)	/ʔɪn.tʌn/	'diamond'	(2d.6) FC-V-LC.FC-V.LC	√ PL: /ʔɪn.tʌn/
---	---	(2d.7) FC-V-LC.LC-V.LC	---	---
(2d.8.1)	/tʌn.dɪŋ/	'fight'	(2d.8) FC-V-LC.LC-V.LC	√ MK: /tʌn.dɪʔʌŋ/
(2d.8.2)	/sʌm.bʊŋ/	'connect'		RI: /sʌm.bʊŋ/
(2d.9.1)	---	(2d.9) LC-V-FC.FC-V.FC	---	---
(2d.10.1)	---	(2d.10) LC-V-FC.FC-V.LC	---	---
(2d.11.1)	---	(2d.11) LC-V-FC.LC-V.LC	---	---
(2d.12.1)	---	(2d.12) LC-V-FC.LC-V.LC	---	---
(2d.13.1)	/bʊŋ.kʊs/	'wrap/pack'	(2d.13) LC-V-LC.FC-V.FC	x MK: /bʊŋ.kʊʔɪh/
(2d.13.2)	/lʌŋ.kʌh/	'step'		PL: /lʌŋ.kʌ:/
(2d.14.1)	/lʌm.bʌt/	'slow'	(2d.14) LC-V-LC.LC-V.FC	x MK: /lʌm.bʌʔ/
(2d.15.1)	/bʌn.tʌl/	'pillow/cushion'	(2d.15) LC-V-LC.FC-V.LC	x MK: /bʌn.tʌ:/
(2d.16.1)	/gʌn.ʝɪl/	'odd/strange'	(2d.16) LC-V-LC.LC-V.LC	√ MK: /gʌn.ʝɪʔʌ:/

Some of alternations in non-identical cognates above seem to become the factors of phonotactic constraints in the distribution of syllable structures of identical cognates shared by ID and eight MD-s; and the “suspected factors” of the phonotactic constraints can be seen in the following descriptions of alternations.

- C is altered to **another C**:
  - FC is altered to **another FC** as can be seen in (2b.1.2), (2b.3.2), (2b.7.1), and
  - LC is altered to FC as can be seen in (2b.2.3);
- V is altered to **another V**:
  - **lax V** is altered to **another lax V** as can be seen in (2b.5.3), and
  - **lax V** is altered to **tense V** as can be seen in (2b.1.3), (2b.5.1), (2b.5.2);
- D is altered to **tense V followed by length** (an aspect of suprasegmental features) as can be seen in (2a.2.2.1) & (2c.2.5.1);
- **tense V followed by length** is altered to **sound cluster of lax V followed by plosive-glottal fortis** as can be seen in (2a.1.1.1) -- (2a.1.1.4), (2a.1.2.1) -- (2a.1.2.4), (2a.1.3.1) -- (2a.1.3.3), (2a.1.4.1) - (2a.1.4.3), (2c.1.3.1) -- (2c.1.3.2), (2c.1.4.1) -- (2c.1.4.2), (2c.1.5.1), & (2c.1.6.1);
- **sound cluster of V followed by C** is altered to **another sound cluster of V followed by C**:
  - **lax V-FC** is altered to **another lax V-FC** as can be seen in (2b.1.1), (2b.3.1), (2b.5.4), (2d.14.1);
- **sound cluster of V followed by C** is altered to **sound cluster of D followed by C**:
  - **lax V-FC** is altered to **D-FC** as can be seen in (2d.13.1);
- **sound cluster of V followed by C** is altered to **V followed by length**:
  - **lax V-FC** is altered to **tense V followed by length** as can be seen in (2b.5.1), (2b.5.2), (2d.13.2), (2d.15.1).

**CONCLUSION**

Table 1, Table, 2a, Table 2b, and 2d show the syllable structures of identical cognates shared by ID and eight MD-s. Plosive-bilabial-fortis C dominates the onset, while nasal-alveolar C dominates the coda. Phonotactic constraints that refrain certain C-s from occurring as onset and/or coda are discussed in Sub-section 2. Certain sound-alternations are described as “suspected factors” of phonotactic constraints in syllable structures of identical cognates shared by ID and eight MD-s; they are discussed in Sub-section 2 (i.e. “suspected factors” that refrain certain C-s from occurring as onset and/or coda)

and Sub-section 3 (i.e. “suspected factors” that refrain certain C-s occurring as onset and/or coda and refrain certain V-s and/or D-s from occurring as nucleus; as Table 1, Table, 2a, Table 2b, and 2d show that only certain V-s can occur as nucleus).

Tables 4a – 4d show syllable structures of identical cognates shared by ID and seven MD-s. Some syllable structures that do not belong to the distribution of syllable structures shared by ID and eight MD-s are described. Tables 4a – 4d also show sound alternations found in non-identical cognates.

Disyllabic words dominate the distribution of identical cognates shared by ID and eight MD-s. Only a few monosyllabic words, as can be seen in Table 1, are found to be identical cognates shared by ID and eight MD-s. Meanwhile, only disyllabic words, as can be seen in Tables 4a – 4d, are found to be identical cognates shared by ID and seven MD-s. Therefore, no words with three or more syllables are found to be identical cognates, either shared by ID and eight MD-s nor by ID and seven MD-s.

Further investigations need to be conducted in order that “suspected factors” above-mentioned can be proved as the real factors causing phonotactic constraints in the distribution of identical cognates shared by ID and eight MD-s involved in this article. Investigations involving more MD-s, of course, need to be conducted in order that a more concise distribution of identical cognates shared by ID and MD-s can be obtained.

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