

METATHESES OF INDONESIAN SEGMENTS IN MALAY DIALECTS

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Abstract

Metatheses are found in the cognates shared by the languages derived from the same ancestral language. A previous study recapitulated the cognates shared by Indonesian – a language code derived from a standard variation of Malay – and thirty-four Malay dialects in Indonesia. Abundant cognates with metatheses were found. However, no sufficient explanatory was reported dealing with the distribution of the metatheses. This article gives the explanatory. The data used in this analysis were selected from the previous study, i.e. the phonological forms of the cognates with metatheses. The analyzed metathesized-segments involve consonants, vowels, and segment-clusters. In comparison to vowels, consonants are more involved. The discussion of the metatheses is based on the syllabification-differences between the cognates. The patterns of metatheses comprise perceptual metatheses, reciprocal metatheses, metatheses with segment-insertions, metatheses with segment-deletions, and metatheses with segment-alternations. In addition, the metathesized of segment as the result of length-alternations are also found.

Keywords: metathesis, cognates, syllabification-differences, Malay dialects

Abstrak

Metatesis ditemukan dalam kognat yang dimiliki bersama oleh bahasa-bahasa yang berasal dari sebuah bahasa leluhur yang sama. Dalam sebuah kajian terdahulu, dilakukan rekapitulasi atas kognat yang dimiliki bersama oleh bahasa Indonesia – sebuah kode bahasa yang berasal dari ragam baku bahasa Melayu – dan tiga puluh empat dialek Melayu yang ada di Indonesia. Ditemukan kognat yang mengandung metatesis. Namun, tidak ada penjelasan yang memadai mengenai distribusi metatesis tersebut. Artikel ini memberikan penjelasan itu. Data yang digunakan dalam analisis ini diambil dari kajian terdahulu yang tersebut di atas, yakni bentuk fonologis kognat yang mengandung metatesis. Segmen yang termetatesis dan dianalisis meliputi konsonan, vokal, dan untaian bunyi. Dibandingkan dengan vokal, konsonan lebih banyak terlibat. Pembahasan metatesis didasarkan pada perbedaan silabisasi kognat. Pola metatesis mencakup metatesis perseptual, metatesis resiprokal, metatesis dengan penambahan bunyi, metatesis dengan penghilangan bunyi, dan metatesis dengan alternasi bunyi. Selain itu, metatesis segmen sebagai hasil alternasi atas perpanjangan bunyi juga ditemukan.

Kata kunci: metatesis, kognat, perbedaan silabisasi, dialek Melayu

INTRODUCTION

Standard Indonesian and Malay are derived from the same ancestral language, i.e., Proto-Austronesian (Gordon, 2022). Consequently, there are cognates shared by Indonesian and Malay (and its abundant dialects). There have been previous studies on Malay dialects discussing

metatheses as part of the findings. However, only few phenomena of metatheses were discussed. Rezeki & Widayati (2024) only explained Malay words *hai*, *idup*, *lidah*, and *siapo* which are respectively derived from Proto-Austronesian *warih*, *hudip*, *dilah*, and *sai* in describing metatheses. Lubis & Lubis (2024) as well as Sukma et al. (2024) only pointed out the metathesis of the same single Malay word, i.e. *lidah*.

Later, Syamsuar & Priyoto (2025) investigated the morphophonemic phenomena found in the cognates shared by Indonesian and thirty-four Malay dialects in Indonesia. The findings of the investigation showed various morphophonemic phenomena. Among the phenomena, abundant cognates with metatheses were found. However, no sufficient explanatory was reported upon the distribution of the metatheses. Therefore, as well as the studies previously-mentioned – the study conducted by Syamsuar & Priyoto shows a research gap. To fulfill the research gap, this article gives the explanatory of the distribution of the metatheses in Malay dialects.

The term **metathesis** is derived from Greek words *meta* ‘change’ and *thesis* ‘position’. Mohammed (2024, p. 246) defined it as a notion referring to the transposition of the normal sequence of segments in a word or among words. Meanwhile, Poulidakis (2024, p. 2) pointed out that cross-linguistically, the appearance of metathesis is suggested to be due to articulatory, morphologically, phonologically, prosodic, or phonotactic reasons.

Terfa & Pilah (2021, p. 4) explained that **phonemic metathesis** is found in the pairs of the variations of the English words like *brid* and *bird* or *wæps* and *wasp*. They further mentioned that **syllabic metathesis** is found in the pairs of the variations of the Tiv words like *orihyom* and *ihyomor* ‘an enemy’ or *bokwagh* and *kwaghbo* ‘something bad’.

In addition to segmental metatheses, Akinbo & Ekiugbo (2024) reported the phenomena of **prosodic metatheses**. They comprised the tonal metatheses attested in the speech of nearly all Naijá speakers. In line with that and associated with syllable metathesis, Gutiérrez (2020, p. 291) explained the integrated interpretation under a prosodic analysis of syllable structure constraints. The last explanation is related to part of the discussion in this article.

In analyzing the segment alternations in Basque, Egurtzeqi (2014) grouped the metatheses into **perceptual metathesis** and **reciprocal metathesis**. The first was explained as the movement of a single segment within the phonological string, limited to segments or features with a stretched-out feature. The second was explained as the transposition of two-non-adjacent segments which exchange location/position with each other. Where the metathesized segments are represented by X and Y, the segment movements or transpositions can be simply identified as follow (the symbol $\rightarrow$ refers to ‘is altered into’): (a) in perceptual metathesis, $XABC \rightarrow ABXC$ and (b) in reciprocal metathesis, $XAYB \rightarrow YAXB$.

Based on Egurtzeqi’s explanation above, the realization of the Indonesian word *jilbab* /*ʝiɭ.bʌb*/ ‘headscarf’ as /*ʝi.bɭʌb*/ – in which /*ɭ*/ undergoes transposition – can be identified as a perceptual metathesis; and the alternation pattern of the metathesis is $ABX.CDC \rightarrow AB.CXDC$. Meanwhile, when each Standard Indonesian word like *bisa* /*bɪ.sə*/ ‘able’ and *lagi* /*la.ɡi*/ ‘again’ was respectively realized by the Jakarta 80s-youngsters as /*si.ba*/ and /*ɡa.li*/, reciprocal metathesis is identified to happen within each word; and the alternation pattern of each metathesis is $XA.YB \rightarrow YA.XB$. Then, when an Indonesian word *setrika* /*sə.tri.ka*/ ‘flat-iron’ is realized as /*tə.rɪs.ka*/, it can also be identified that the alternation is a reciprocal metathesis, i.e., the one with the alternation pattern of $XA.YBC.DE \rightarrow YA.BCX.DE$.

In contrast, when the last-exemplified Indonesian phonological word is realized as /sə.tə.ri.ka:/, schwa (/ə/) insertion happens in the middle of the word. As a consequence, transposition happens to /r/. Instead of undergoing perceptual metathesis, the consonant undergoes **re-syllabification**, i.e., a phenomenon explained by Abu Guba & Abu Qub'a (2025, p. 187) as when a consonant becomes attached to a syllable that is different from the one from which it originally came.

Another phenomenon of re-syllabification can be identified when a word undergoes affixation. The Indonesian word *pelipis* /pə.lɪ.pɪs/ 'temple of face' is realized as /pə.lɪ.pɪ.sʌn/ in Palembang Malay, i.e., the cognate containing suffix *-an* (Fauzi and Priyoto, 2025). It can be identified that the transposition of /s/ in the Palembang Malay cognate is a case of re-syllabification. As Rascón (2024, p. 1) explains, re-syllabification occurs when a consonant at the end of a syllable or word boundary is repositioned as the onset of the following syllable.

Terfa & Pilah (2021) explained that metatheses can be identified at the level of phonology (**phonological metatheses**) and/or at the level of graphology (**graphological metatheses**). The alternation of the phonological form /stri.ka:/ into /trɪs.kɑ:/ exemplified previously shows a phonological metathesis. The alternation of the orthographic form *strika* into *triska* shows a graphological metathesis. In describing metatheses, both phonologically and graphologically, the notion of **syllable** should be brought into account. However, the discussion of metatheses in this article is only dealing with the phonological metathesis. Therefore, the matters of syllable and syllabification based on phonological perspective need to be primarily discussed.

Associated with the notion of **syllable**, there is a notion of so-called **syllabification**. Citing Goldsmith (2011) and Jucksriporn & Sornil (2011), Sibeko & Zaanen (2024) pointed out that syllabification is a process of extracting syllables from words and is essential to many natural language processing tasks. Furthermore, Crystal (2008, p. 467) argues that syllabification refers to the division of a word into syllables. Yavaş (2011, p. 138) exemplified that the Spanish word *isla* 'island' shows such syllabification of [is.la]. Thus, we can identify that the diacritic symbol of [.] is used to separate a syllable from another/other syllable(s).

Citing Gutiérrez (2010), Poulidakis (2024) mentioned that in several languages, metathesis leads to the avoidance of complex syllable structures, such as codas. In Nivacle, complex codas are not allowed. An example is /ji.jax/ + /s/ → /ji.j.xʌs/ 'pumas'. It can be identified that the coda of the final syllable in the root (the form before /s/ attachment) is metathesized into the onset of the final syllable of the new form resulting from the attachment; and the /s/ being attached becomes the coda of the new form.

The fact that the syllable structures of the Indonesian original words only comprise CV and CVC (Syamsuar 2018) – as well as the avoidance of complex syllable structures in Nivacle – is associated with the notion of **phonotactics**. The notion was explained by Fromkin, Rodman, & Hyams (2014, p. 575) as rules governing permissible strings of phonemes within a syllable; and it was explained that in English a word-initial nasal consonant may be followed only by a vowel. Dealing with the phonotactics in Indonesian and Malay, Alwi (2014, pp. 77–80) listed the consonant clusters that are allowed to occur in Indonesian and/or Malay words.

Based on the concepts notions discussed above, this article describes the types and patterns of metatheses found in the abundant cognates shared by Indonesian and Malay dialects. The explanatory of how and why particular metatheses happen will be discussed. Furthermore,

besides segmental metatheses, some prosodic metatheses will also be discussed. In addition, phonotactic constraints that cause metatheses will also be discussed.

METHOD

The data used in this analysis are the phonological forms of the cognates shared by Indonesian and Malay dialects in Indonesia. The cognates are the ones with segment or segment-cluster transpositions. The transpositions comprise perceptual and reciprocal metatheses. The cognates with transpositions that comprise re-syllabifications are excluded.

The phonological forms were selected from the previous study conducted by Syamsuar & Priyoto (2025). In the data display (in the section of discussion), the names of Malay dialects are shortened as follows: AB is for Ambon, AS for Asahan, BG for Bangka, BJ for Banjar, BK for Bengkulu, BL for Belitung, BR for Berau, BS for Besemah, BP for Bilah Panai, BT for Betawi, DL for Deli, JM for Jambi, KC for Kerinci, KP for Kupang, KT for Kutai, LK for Langkat, LL for Loloan, MK for Minangkabau, ML for Melawi, MN for Manado, MO for Muko-muko, MS for Makassar, MU for Musi, OL for Orang Laut, PL for Palembang, PT for Pontianak, RI for Riau, RP for Riau Pesisir, SB for Sambas, SD for Serdang, SR for Serawai, TM for Tamiang, TN for Ternate, and UK for Ulu Kapuas.

In the data displays, the metathesized segments are bold-typed. The analysis of segment and/or segment-cluster metatheses are based on the syllabification differences between the Indonesian cognates and the Malay cognates. The synchronic-descriptive analysis is based on the fact that Indonesian is derived from a standard variation of Malay, i.e., Johor-Riau Malay (Abu Bakar, 2019) and nowadays becomes the national and official language of the Republic of Indonesia, i.e., the country where the thirty-four Malay dialects are spoken.

In the section of discussion, the cognates with metatheses are displayed in several lists; each list consists of three columns. The first column displays the data number (in the first line) and the phonological forms of the Indonesian cognates (in the second line; right below the data number). The second column displays the glossary of the cognates; the glossary of particular cognates, i.e. the ones referring to plants and/or animals, are given in Latin (in the first line). The abbreviations of the names of the Malay dialects to which the cognates belong are put below the glossary (in the second line of the second column). The third column displays the phonological forms of the Malay cognates. When multiple cognates exhibit the same metathesis pattern, only one cognate is presented as the representative of that pattern.

FINDINGS AND DISCUSSION

The metathesized segments being discussed involve consonants, vowels, and segment-clusters.

Metatheses of Consonants

Metatheses of consonants involve (a) single consonants and (b) two consonants or more. In addition, there are altered consonants that are metathesized; and the metathesized-altered consonants are italicized.

List 1. Metatheses of Single Consonants

11a	able		11b	rubbish	
/dʌ.pʌt/	BG, BS, KC, MO, MU, PL, PT, SR: /pʌ.Cʌz/		/sʌm.pʌh/	JM, PL: /sʌ.ɣʌp/	
12a	know		12b	religious advice	
/tʌ.ʷu:/	BJ: /zu.tʌw/		/fʌt.wa:/	MK: /tʌ.wɛz/	
12c	arm-pit		12d	spot on skin	
/kə.tɪ.jʌk/	BR: /kʌ.lɪ.tʌk/		/bɪn.tɪl/	BJ: /tɪ.kɪl/	
12e	bite		13a	spurt	
/gɪ.gɪt/	BJ: /kɪ.tɪp/		/mʌn.Crʌt/	BJ: /Cu.rʌt/	
14a	intention		14b	reveal	
/mʌk.sʊt/	MK: /kɔ.sʊz/		/sɪŋ.kʌp/	BJ: /sɪ.lʌk/	
14c	charming		15a	astonished	
/Cʌn.tɪk/	BG: /CI.kʌr/		/tʌz.Jʊp/	LL: /zʌ.Jʊp/	
17a	stop		17b	belt	
/stop/	AB: /zɪs.tɒp/		/sʌ.bʊk/	BJ: /zʌs.bʊk/	
17c	investigate		17d	palace	
/sɪ.dɪk/	DL: /rɪ.sɪz/		/zɪs.ta.na:/	BG: /sə.ta.na:/	
17e	selesma		17f	each	
/sə.lɛs.ma:/	RI: /sə.sə.mə:/		/mʌ.sɪŋ/	PL: /sɛ.wʌŋ/	
17g	greedy		110a	oh/alas	
/rʌ.kʊs/	UK: /sʌ.ʷʊz/		/hʌj/	KC: /zʌʲɛh/	
110b	case		110c	overlap	
/zɪh.wʌl/	BJ: /hɪ.wʌl/		/tɪn.dɪh/	DL: /hɪn.dɪz/	
110d	rubbish		21a	burn	
/sʌm.pʌh/	KC: /sʌm.hʌz/		/bʌ.kʌr/	BJ: /zʊ.bʌr/	
21b	buffalo		22a	shallow	
/kəɹ.bʌw/	RP: /kə.bə.ɣʌw/		/dʌŋ.kʌl/	TM: /tən.dʌl/	
23a	wicked		25a	example	
/ʃʌ.hʌt/	ML: /zɪ.Jʌt/		/mɪ.sʌl/	DL, SK, SD: /zʌm.sʌl/	
25b	estuary		25c	molars	
/mu.wa.ra:/	BR: /zʊ.mʌ.rʌz/		/gə.rʌ.hʌm/	MK: /gʌ.rʌ.mʌn/	
26a	ghost		26b	basket	
/hʌn.tu:/	MO: /zʌ.tʊn/		/kə.rʌn.Jʌŋ/	SR: /kɪn.Jʌɣ/	
26c	this		26d	there	
/zɪ.nɪ:/	BJ: /nɪ.jʌz/		/sa.na:/	DL, LK, SD, LK, SD: /sɪ.jʊn/	
26e	slippery		26f	crowd	
/lɪ.Cɪn/	BJ: /lɪn.Cɪr/		/kə.ru.mʊn/	SB: /kə.rʊn.dʊŋ/	
28a	you		28b	stool/bench	
/zəŋ.kʌw/	MN, TN: /ŋa.na:/		/bʌŋ.ku:/	MO: /bʌ.kʊŋ/	
28c	ear		29a	Wednesday	
/tə.li.ŋa:/	UK: /kə.lɪ.nʌŋ/		/rʌ.bu:/	BJ: /zʌr.bʌz/	
29b	sustenance		29c	price	
/rə.zə.ki:/	MK: /ʃa.rʌ.ki:/		/hʌr.ga:/	BL, RI: /rə.gə:/	
29d	sparkle		29e	roar	
/Cə.mər.lʌŋ/	MK: /Cʌ.rɛ.lʌŋ/		/gə.mʊ.rʊh/	SB: /gə.rʊn.tʊn/	
29f	lantern		29g	marble	
/lən.te.ra:/	AB: /lʌn.tər.na:/		/kə.le.rɛŋ/	BJ: /kʌ.lɪ.kɪr/	
212a	tongue		212b	science	
/lɪ.dʌh/	BJ, BR, PL: /zɪ.lʌt/		/zɪl.mu:/	BG: /lɛ.mu:/	
212c	kite		212d	stupid	
/lʌ.jʌŋ.lʌ.jʌŋ/	MK: /zʌ.lʌŋ.zʌ.lʌŋ/		/tɔ.lɔl/	JM: /lɔ.lɔz/	
212e	coconut		212f	curl	
/kə.rʌm.bɪl/	DL, LK: /kə.lʌm.bɪɣ/		/zɪ.kʌl/	BT: /gʌ.lɪŋ/	

Among the fortis consonants (in Data 1xx), alveolar-fricative /s/ is metathesized more. Among the lenis consonants (in Data 2xx), post-alveolar-trill /ɾ/ is metathesized more. Furthermore, the metatheses are grouped into the following categories.

- Onset is metathesized into onset in another syllable: initial → antepenultimate (212c), initial → penultimate (25b & 29b), initial → final (12a, 17c, 21a, 22a, 23a, & 212a); penultimate → final (12c & 212c); final → initial (11a, 12d, 13a, 17f, & 26c), final → penultimate (21b & 29e).
- Onset is metathesized into coda: monosyllable → monosyllable (110a); monosyllable → initial (17a); initial → initial (17b, 25a, & 29a); initial → final (17c), final → penultimate (29f) final → final (11b, 14b, 26d, 28c, & 29g).
- Coda is metathesized into onset: initial → initial (12b, 14a, 15a, 17d, 110b, 28a, 29c, & 212b); initial → penultimate (14a); penultimate → penultimate (17e & 29d); final → initial (17g, 110c, 26e, & 212d); final → penultimate (212e), final → final (12e, 14c, 110d, 25c, & 212f).
- Coda is metathesized into coda in another syllable: initial → final (26a & 28b), penultimate → initial (26b), final → penultimate (26f).

The recapitulation above shows that the metatheses involve more transpositions of consonants as coda in the initial syllable into onset in the initial syllable. In general, consonant-metatheses involve more transpositions of coda into onset. The recapitulation also shows that only lenis consonants are metathesized from coda into coda in another syllable.

Metatheses in some cognates happen simultaneously with segment deletions. Each metathesized segment replaces the syllabic position of the deleted segment: in 12b, /t/ replaces /ɸ/; in 13a, /C/ replaces /m/; in 14a, /k/ replaces /m/; in 15a, /ɹ/ replaces /t/; in 17d, /s/ replaces /ɹ/; In 17e, /s/ replaces /l/; in 110b, /h/ replaces /ɹ/; in 28a, /ŋ/ replaces /ɹ/; in 29c, /ɾ/ replaces /h/; in 29d, /ɾ/ replaces /m/; in 212b, /l/ replaces /ɹ/. The recapitulation shows that the metatheses of fortis-consonant happening simultaneously with segment deletions involve more /s/ and the metatheses of lenis-consonant happening simultaneously with segment deletions involve more /ɾ/. The recapitulation shows that /ɹ/ becomes the most frequently-deleted fortis-consonant and /m/ becomes the most frequently-deleted lenis-consonant.

Metatheses in some cognates happen simultaneously with segment insertions. In contrast with what happened in the cognates discussed previously, the inserted segment replaces the metathesized segment. In other words, it can be identified that in 17a and 17b, /s/ metathesis happens simultaneously with the insertion of /ɹ/; in 110a, /h/ metathesis happens simultaneously with the insertion of /ɹ/; in 25a, /m/ metathesis happens simultaneously with the insertion of /ɹ/; in 26e, /n/ metathesis happens simultaneously with the insertion of /ɾ/; in 26f, /n/ metathesis happens simultaneously with the insertion of /ŋ/; in 29a, /ɾ/ metathesis happens simultaneously with the insertion of /ɹ/; and in 29f, /ɾ/ metathesis happens simultaneously with the insertion of /n/. The recapitulation shows that /ɹ/ becomes the most frequently inserted fortis-consonant and /ɾ/ becomes the most frequently inserted lenis-consonant.

The transpositions of consonants discussed in the last two paragraphs can be identified as perceptual metatheses, i.e., the ones that are associated with consonant deletions and/or insertions. Other perceptual metatheses are found in 26a & 28b. In 26a, besides the perceptual metathesis of /n/, alternation happens to the onset of the initial syllable. In 28b, besides the perceptual metathesis of /ŋ/, alternation happens to the nucleus of the final syllable. However, the altered segments are not metathesized or trans-positioned.

In some cognates, consonant-alternations are found; and the altered consonants are also metathesized. In addition, length (one of suprasegmental features or one of prosodic aspects) is also found to be altered into consonants; and the consonants are also metathesized. The following is the recapitulation the alternations:

- /p/ is altered into /l/ in 14b and into /ɹ/ in 110d;
- /t/ is altered into /r/ in 14c and into /ɹ/ in 110 c & 212d;
- /k/ is altered into /ɹ/ in 21a, into /t/ in 22a, and into /ŋ/ in 212f;
- /h/ is altered into /ɣ/ in 11b and into /ɹ/ in 23a & 212a and into /t/ in 29e;
- /b/ is altered into /k/ in 12d;
- /d/ is altered into /C/ in 11a, into /r/ in 17c and into /t/ in 212a;
- /g/ is altered into /p/ in 12e;
- /m/ is altered into /w/ in 17f, into /ŋ/ in 26f, and into /n/ in 29e;
- /ŋ/ is altered into /k/ in 29g;
- /r/ is altered into /w/ in 17g and into /ɣ/ in 21b, 26b, & 212e;
- /z/ is altered into /ʃ/ in 29b;
- /w/ is altered into /ɹ/ in 25b;
- /j/ is altered into /l/ in 12c and into /ɹ/ in 212c;
- /w/ is altered into /ɹ/ in 12a; and
- /:/ is altered into /j/ in 26c & 26d and into /n/ in 28c.

The recapitulation shows that /h/ is the most frequently altered fortis consonant. Meanwhile, /r/ is the most frequently altered lenis consonant. Then, the length (/:/) in cognates 26c, 26d, and 28c is altered into segments; so, the cognates show the phenomena of prosodic metatheses.

The altered consonants recapitulated above also undergo transpositions. In each cognate discussed above, the metathesized altered-consonant (as well as the metathesized consonant resulting from the length alternation) and the metathesized (non-altered) consonants are not adjacent. Thus, it can be identified that reciprocal metatheses happen, i.e., the ones with segment (and length) alternations.

List 2. Metatheses of Two Consonants or More

312	hold under arm		314	deaf	
/kʌ.pɪt/	BG:	/kʌ.tɪp/	/pə.kʌɹ/	BR:	/kʌp.pʌɹ/
316	ceiling		317	pistol	
/pɪʌ.fɔn/	JM:	/fɪʌ.pɔn/	/pɪs.tɔl/	PT:	/sə.pə.tɔl/
331a	quick/fast		331b	tease	
/Cə.pat/	BJ:	/hʌn.Cʌp/	/kə.Cʌp/	MS:	/Cʌ.pʌɹ/
334a	say		334b	choke	
/Cʌ.kʌp/	BK, DL, LK, JM, MK:	/kɛ.Cɛɹ/	/Cə.kɪk/	KC:	/kə.Cʌɹ/
342a	knock		342b	arm-pit	
/kə.tɔk/	AS, BK, BP, DL, LK, MK, RI, SD, TM:	/tɔ.kɔɹ/	/kə.tɪ.jʌk/	BS, OL:	/tə.kɪ.jʌɹ/
354	stir/mix		3104	laughter	
/ɹʌ.dʊk/	SR:	/kʊ.dʌɹ/	/bʌ.hʌk/	MK:	/bʌ.kʌh/
3107	blow		4112	penis	
/həm.bʊs/	BG:	/sə.bʊh/	/pə.ɪɪr/	LK:	/kə.ɪə.pɪɪ/
425	blunt/dull		429a	grow pale	
/tʊm.pʊl/	BT:	/mʊn.tʊl/	/lʊn.tʊr/	BJ:	/tʊ.rʊh/

429b	vibrate				
/gə.tʌr/	MK:	/gʌ.rɛ.tɛɜ/	4412	bend	
452	Muslim prayer-call		/kɛ.lɔɜ/	MK:	/lɛ.kɔɜ/
/ɹʌ.bʌŋ/	BR:	/bʌ.ɹʌŋ/	456	this	
4513	you		/ɹi.ni:/	BJ:	/ni.jʌɜ/
/ɹʌ.wʌɜ/	MK:	/wʌ.ɹʌŋ/	524	crouch	
593	pointed/sharp		/də.kʌm/	BR:	/kʌ.dʌm/
/rʊn.Cɪŋ/	KT:	/Cʊ.rɪŋ/	5121	temple (of face)	
5123	shrimp paste		/pə.li.pɪs/	BJ:	/pʌ.pɪ.li.ŋʌn/
/be.lʌ.Cʌn/	BL, JM:	/Cʌ.lɔɜ/	619a	tadpole	
619b	frown		/bə.ru.du:/	BG:	/kər.bu.du:/
/Cəm.bə.rʊt/	BS:	/Cə.rʊ.bʊɜ/	619c	news	
629	push		/kʌ.bʌr/	MS:	/ka.re.bʌ:/
/dʊ.rɔŋ/	MK:	/dʌ.rɔ.dɔŋ/	634	jerry can	
689	edge		/Jə.rɪ.ɡɛn/	SR:	/ɡə.rɪ.Jɛn/
/pɪŋ.ɡɪr/	MS:	/bɪ.rɪŋ/	6912a	waste money	
6912b	sincere		/rɔ.jʌl/	BT:	/lɔ.jʌr/
/re.la:/	MK:	/li.ra:/	6912c	volunteer	
6121	pumpkin		/su.ka.re.la:/	BR:	/sʊ.kʌ.li.rʌɜ/
/la.bu:/	BJ:	/bʌ.lʊh/	6122	tongue	
6125	sex/gender		/li.dʌh/	ML, UK:	/di.lʌh/
/kə.lʌ.mɪn/	BG:	/kə.mʌ.lu:/	6126	pain in the bones	
6129a	solder		/li.nu:/	RI:	/ni.lu:/
/sɔl.dɛr/	BT:	/sɔr.dɛl/	6129b	trousers	
74126	shake head		/sə.lʊ.wʌr/	SR:	/sə.rʊ.wʌl/
/ɡɛ.lɛŋ/	BG:	/ɹɪŋ.ɡəl/			

Data 3xxx show that two fortis consonants are simultaneously metathesized. Data 4xxx show simultaneous metatheses of a fortis consonant and a lenis consonant. Data 5xxx show simultaneous metatheses of a lenis consonant and a fortis consonant. Data 6xxx show simultaneous metatheses of two lenis consonants. Data 74126 shows simultaneous metatheses of three lenis consonants. Therefore, the recapitulation above shows that lenis consonants are more involved in the simultaneous metatheses of two consonants or more.

The simultaneously metathesized consonants do not occur adjacently, so they are reciprocal metatheses. Using X, Y, and Z representing the metathesized consonants and using the other alphabets representing the non-metathesized segments, the following are the patterns of the reciprocal metatheses; and the figures show the data number.

- AB.XCY → AB.YCX (312) .
- XA.YA → YB.XCD (456) .
- XA.YB → YA.XB (6126) ; YC.XB (6912b) ; YC.XDE (6121) .
- XA.YAX → YA.XAB (4513) .
- XA.YAB → YA.XAB (452) ; YC.XCD (334a) ; XC.YA.XAB (629) .
- XA.YBC → YA.XBC (6122) ; YB.XBC (524) ; YBD.XBC (314) ;
YA.XDE (334b) ; YA.XBC (4412) ; YB.XBD (342a) ;
DBE.XBY (331a) .
- XA.BCY → YA.BCX (6912a) ; YC.BAX (354) .
- AB.XCY → XB.YBC (331b) .
- AB.XBY → AB.YBX (3104) ; AC.YD.XC (619c) .
- XA.YBC → DA.YA.XBE (4112) .
- XA.YAZ → BCZ.XDY (74126) .

- **XAB.YCD** → **YA.XCD** (593) ; **YAB.XCD** (316) .
- **XAB.CDY** → **YA.CDX** (3107) .
- **XAY.BAC** → **YAD.XAC** (425) .
- **XAY.BCD** → **YE.XE.BCD** (317) .
- **ABX.CBY** → **ABY.CBX** (6129a) ; **DB.YBX** (689) .
- **AB.XCY** → **AC.YD.XDE** (429b) .
- **ABC.XBY** → **XB.YBD** (429a) .
- **XA.YB.CD** → **EAY.XB.CD** (619a) .
- **XA.YB.CDE** → **YA.XB.CDE** (342b) .
- **YA.XB.YBC** → **YB.XDE** (5123) ; **YD.YB.XB.EDF** (5121) .
- **XA.BC.YDE** → **YA.BC.XDE** (634) .
- **AB.XC.YDE** → **AB.YC.XDE** (6129b) ; **AB.YF.XG** (6125) .
- **ABC.XB.YDE** → **AB.YD.XDF** (619b) .
- **AB.CD.XE.YD** → **AF.CG.YH.XGI** (6912c) .

The recapitulation above shows that the Indonesian cognates with the pattern of **XA.YBC** is the most-frequently altered.

Metatheses of Vowels

Metatheses of vowels involve single vowels and two vowels.

List 3. Metatheses of Single Vowels

83a	spell the alphabet	83b	silk
/ʔe.ʃa:/	LK:	/su.tra:/	JM:
	/ʔa.ʃi:/		/sa.tʃo:/
84a	all	84b	know
/sə.mu.wa:/	SB:	/ta.ʷu:/	BJ:
	/su.me:/		/ʔu.taw/
91a	direction to Kaaba in Mecca	91b	loamy
/kɪ.blʌt/	MK:	/lɪ.jʌt/	UK:
	/kʌ.bɪ.lʌt/		/lʊ.pɪt/
91c	choke	92	free
/Cə.kɪk/	BJ:	/bɛ.bʌs/	BG:
	/Cɪ.kʌk/		/bɪ.bes/
93a	why	93b	because
/kə.na.pa:/	LL:	/ka.rə.na/	BK, PL, TM:
	/na.ʔa.pə:/		/kəy.no:/
94a	stir/mix	94b	level/degree
/ʔʌ.dʊk/	PT:	/də.rʌ.jʌt/	AS, BP, DL, LK, SD:
	/kɔ.dʌʔ/		/dʌy.jʌt/
94c	embrace	94d	carry on
/də.kʌp/	AS, BP, DL, LK, SD:	/ʔəm.bʌn/	BG, BL:
	/dʌ.kup/		/ʔʌm.bɪn/
95a	discussion	95b	knee
/mʊ.sʌ.wʌ.rʌt/	AS, BP, DL, LK, SD:	/lʊ.tʊt/	BJ:
	/mə.su.wʌ.ʔʌt/		/lɪn.tʊ.hʊt/
95c	pointed/sharp	95e	buy off
/rʊn.Cɪŋ/	BG:	/tə.bʊs/	BJ, PL:
	/rʌn.Cʊŋ/		/tʊm.bʌs/
95f	stir/mix	96a	jump
/ʔʌ.dʊk/	BT:	/lɔn.Cʌt/	KT:
	/ʔʊ.dək/		/lɛn.Cʔʔ/
96b	Chinese temple		
/tə.pe.kʊŋ/	AS, BP, DL, LK, SD:		
	/pɔ.kʊŋ/		

Data 8xx show the perceptual metatheses of single tense-vowels. Data 9xx show the perceptual metatheses of single lax-vowels. Therefore, the recapitulations shows that single lax-vowels are involved more in the perceptual metatheses.

The following is the distribution of the metathesis of the single vowels based on the syllabification:

- nucleus of the initial syllable → the nucleus of antepenultimate in 95a;
- initial → penultimate in 91a & 95b;
- initial → final in 91b, 92, 93a, 94a, 95c, & 96a;
- penultimate → initial in 84a, 93b, & 94b;
- final → initial in 83a, 83b, 84b, 91c, 94c, 94d, 95e, 95f, & 96b.

The recapitulation shows that more vowels occurring as the nucleus of the final syllable in the Indonesian cognates are metathesized into the nucleus of the initial syllable in the Malay cognates.

List 4. Metatheses of Two Vowels

1013	guess		1114a	sort	
/ki.ra:/	UK:	/ka.ʒi:/	/pɪ.ləh/	BJ:	/pə.lɪh/
1114b	stretch		1115	whistle	
/gə.li.jət/	BR:	/kʊ.lə.ʒɪt/	/sɪ.jʊl/	LL:	/sʊ.wɪr/
1124	scattered		1126	soot	
/se.rək/	SB:	/sə.rək/	/Ce.məŋ/	DL, LK:	/Co.məŋ/
1134	nephew/niece		1141a	reason	
/kə.mə.nə.kən/	BG:	/kə.mə.nəʒ/	/də.lɪh/	KC:	/ʒɪ.ləh/
1141b	charming		1143	stagnant	
/Cən.tɪk/	BG:	/CI.kər/	/mən.dək/	BJ:	/mən.dək/
1145a	stir/mix		1145b	hair	
/ʒə.dʊk/	BJ, BR:	/ʒʊ.dək/	/rəm.bʊt/	SR:	/gəm.bək/
1151	pointed/sharp		1163	scratch	
/rʊn.Cɪŋ/	AS:	/ɣɪn.Cʊŋ/	/gɔ.res/	SR:	/ge.rɔh/

Data 1013 shows the reciprocal metathesis of two tense vowels. Data11xx show the reciprocal metatheses of two lax vowels. Using X and Y representing the metathesized vowels and using the other alphabets representing the non-metathesized segments, the following are the patterns of the reciprocal metatheses; and the figures show the data number.

- **AX.BY** → **AY.CX** (1013) .
- **AX.BYC** → **AY.BXC** (1114a), (1124), (1126), (1145a);
AY.BXD (1163); **AY.DXE** (1115); **DY.DXE** (11.1.5) .
- **AXB.CYD** → **AY.DXF** (1141b); **AYB.CXD** (1143); **EYB.CXD** (1151);
EYB.CXF (1145b) .
- **AB.CX.DYE** → **FG.CY.HXE** (1114b) .
- **AB.CX.DY.EYF** → **AB.CX.DXG** (1134) .

The recapitulation above shows that the Indonesian cognates with the pattern of **AX.BYC** is the most frequently altered. In addition, Data 1141b shows that the pattern of **AXB.CYD** is altered into **AY.DXF** (in which, D represents a consonant); so, it can be identified as a reciprocal metathesis involving three segments (two vowels + one consonant).

Metatheses of Segment Clusters

Metatheses of segment clusters involve (1) metatheses of a single consonant and a single vowel adjacent to each other, and (2) segment cluster comprising CV, VC, or CVC.

List 5. Metatheses of a Consonant and a Vowel

1293	because
/ka. re .na:/	BS, DL, LL, PT: /k er .nə:/
1294	level
/də. ra .JAt/	KC: /d ar .JAt/

Each cognate listed above shows that two segments (a lenis consonant and a lax vowel) are simultaneously metathesized. The two segments occur adjacently; so, instead of showing the reciprocal ones, each data shows two simultaneous perceptual metatheses. Data 1293 shows the alternation of AB.XY.CD into A**YX**.CY and 1294 shows the alternation of AB.XY.CYD into A**YX**.CYD. As a matter of fact, segment alternation and segment deletion are also found in the cognates; but the altered segment is not metathesized.

List 6. Metatheses of Segment Cluster

1363	why
/kə. na .pa:/	LL: / na .ʔa.pə:/
1414	immune
/kə. ba l/	BT, PL: / ba .ʔal/
1446	unstable
/gɔ. j ah/	DL: /hʊ. g oh/
14121	flow
/ʔa. li r/	BR: / li .jʊr/
1556	persistent
/tə. ku n/	TM: /tʊ. n ʔ/
16211	cut/quote
/kʊ. t Ip/	UK: / t I. p ʔs/
174121	sprain
/kI. li r/	BS: /ɣI. k Il/
18174	free
/bɛ. ba s/	BG, BL, JM, MU, PL: / ba . s Iŋ/
19896	snore
/ŋɔ. r ɔk/	SB: /sʌ. ŋ ɔr/

Each cognate listed above contains a perceptual metathesis, i.e., perceptual metathesis of a segment cluster. The segment clusters comprise a lenis consonant + a tense vowel in 1363, a lenis consonant + a lax vowel in the data numbered with 14xx, a lax vowel + a lenis consonant in 1556, a fortis consonant + a lax vowel + a fortis consonant in 16211, a fortis consonant + a lax vowel + a lenis consonant in 174121, a lenis consonant + a lax vowel + a fortis consonant in 18174, and a lenis consonant + a lax vowel + a lenis consonant in 19896.

Each metathesized segment-cluster (CV or CVC) in 1363, 1446, 16211, and 18174 constitutes a single syllable in the Indonesian cognate. Each metathesized segment-cluster (CV or VC) in 1414, 1421, and 1556 becomes part of a syllable in the Indonesian cognate. Each metathesized segment-cluster (CVC) in 174121 and 19896 is split; in the Indonesian cognate, the first two segments (CV) constitute the initial syllable, while the last segment (C) becomes the coda of the final syllable.

Phonotactics-associated Metatheses

Some metatheses are dealing with phonotactic constraints. In other words, the phonological realizations of the cognates in a particular dialect are governed with its phonotactics. Data 29d shows that /ɾ/ as the coda of the penultimate in the Indonesian cognate is metathesized into the onset of the penultimate in Minangkabau Malay cognate. It is associated with the Minangkabau Malay phonotactics that refrains /ɾ/ from occurring as a coda (Batais, 2024, p.3).

The cognates shared by Banjar Malay and Brunei Malay recapitulated by Syamsuar (2020) showed that Banjar phonotactics governs that words should end with consonants or diphthongs. Data 12a shows that the Indonesian cognate ends with a vowel. Associated with the phonotactic constraints in Banjar, it is altered into a Banjar cognate ending with a diphthong. Since the onset of the final syllable of the Indonesian cognate is a bilabial glide, a phenomenon of dissimilation happens: the glide (which is phonetically closely-related to diphthong) is altered into a glottal-plosive and metathesized into the onset of the initial syllable in the Banjar cognate. Simultaneously, the alveolar plosive as the onset of the initial syllable of the Indonesian cognate is metathesized into the onset of the final syllable of the Banjar cognate.

In addition, Data 456 shows that Indonesian cognate ends with a vowel. Associated with the phonotactic constraints in Banjar Malay, it is altered into a Banjar Malay cognate ending with a consonant. The coda or the consonant that ends the Banjar Malay cognate is metathesized from the onset of the initial syllable of the Indonesian cognate. The onset of the initial syllable of the Banjar Malay cognate is metathesized from the onset of the final syllable of the Indonesian cognate. Then, palatal-glide is inserted and becomes the onset of the final syllable of the Banjar Malay cognate.

CONCLUSION

The results of the discussion in the previous section show that, compared to vowels, consonants undergo more metatheses. Then, compared to fortis consonants, lenis consonants undergo more metatheses. Furthermore, compared to tense vowels, lax vowels undergo more metatheses.

The discussion shows that the metatheses of consonants and/or vowels (shown in List 1, List 2, List 3, and List 4) are categorized into (a) perceptual metatheses (b) perceptual metatheses happening simultaneously with segment insertions, (c) perceptual metatheses happening simultaneously with segment deletions, (d) reciprocal metatheses, and (e) reciprocal metatheses with segment alternations. Meanwhile, the metatheses of segment-clusters (displayed in List 5 and List 6) are categorized into (a) simultaneous perceptual-metatheses of a single consonant and a single vowel and (b) perceptual metatheses of segment clusters. The segment clusters comprise CV, VC, & CVC.

According to Alwi (2013), one of suprasegmental features or one of prosodic aspects, i.e., length, occurs after the vowel becoming the nucleus of the final syllable of an Indonesian word. Associated with length, prosodic metatheses are found. Data 26c, 26d, & 28c show that length occurring after the nucleus of the final syllable in the Indonesian cognate is metathesized. However, the length is altered into a segment, i.e. alveolar nasal /n/ in 28c and into palatal-approximant /j/ in 26c & 26d.

Dealing with the syllabification, most cognates with metatheses are in the forms of disyllabic words. There are some trisyllabic cognates; while, there are only few monosyllabic and polysyllabic cognates. The finding is in line with what was pointed by Adelaar's (1992; cited by

Deterding, Gardiner, and Noorashid, 2022) that more than 90 per cent of the native lexicon of Malay is based on disyllabic roots and with a small number of monosyllabic and trisyllabic roots. A particular cognate in the form of reduplication is found to undergo perceptual metatheses. The Indonesian reduplication, which is also altered into Malay reduplication, is displayed in 212c.

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