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Genetic Relationships Among Bengkulu Malay, Rejang, and Javanese Language: A Lexicostatistical and Glottochronological Analysis

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abstract

The aim of this research was to examine the genetic relationship between three languages such as Bengkulu Malay (BMB), Rejang (BR), and Javanese (BJ) language. This present research is based on Comparative Historical Linguistic theory which has the purpose to discuss family languages by making comparisons of the elements that indicate the genetic relationship in languages. In this context, the study attempts to identify similarities and differences in basic vocabulary in order to trace the historical connections among those languages and to determine their degree of relatedness systematically and empirically. The data used in this research was in the form of 200 words of Swadesh vocabulary from informants which is native speakers of languages studied. These informants were carefully selected based on specific criteria, including being born and raised in the speech community, actively using the language in daily communication, and having minimal influence from other languages. The genetic relationship between languages was calculated by using Lexicostatistical and Glottochronology methods to measure the percentage of cognate words and to estimate the time of separation between the languages. The outcome of analysis shows several results such as: (1) BMB and BR is included in family language classification with the isolated time between 360 – 602 M, (2) BMB and BJ is included in stock language classification with the isolated time between 821 – 377 BM, and (3) BR and BJ are included in stock language classification with the isolated time between 1071 – 589 BM. The result shows that the genetic relationship between BMB and BR is closer than the relationship between BMB and BJ or BR and BJ. This finding is supported by the higher percentage of cognate vocabulary shared between BMB and BR compared to the other language pairs. From all the results, it can be said that the geographical relationship of languages influenced the isolated time between them, indicating that languages located in closer geographical areas tend to maintain stronger linguistic similarities, whereas those separated by greater distance demonstrate lower levels of lexical similarity and earlier divergence times. Overall, geographical proximity significantly shapes patterns of language change historically.

1. Introduction

Language is a medium for humans as a member of a community to interact, cooperate, and identify themselves. Language is a tool for communication that is vital in social life. As supported by Alwasilah (1983), members in society cannot communicate without language as the medium. In other words, humans live with their language as the

main need in establishing contact with others. Language as the realization of humans' culture experiences developments and changes over the time. This is possible because of the pattern of human life as the owner and user of language. It cannot be denied that language has its own history of development. Based on the history, language turns out to have something in common with another language, especially if two languages live in geographically neighbouring communities. Studies of language in terms of its history in linguistic studies are included in the study of Comparative Historical Linguistics or Historical Comparative Linguistics. By this fact, comparative historical linguistics is a universal study, since it aims to find the facts in how the perspective of the world in colonial eras then preserved it to their language.

The recognition of two or more languages always attracts people's attention, especially linguists. Through the study of two or more languages, linguists can see whether certain similarities exist in the studied language. Furthermore, this makes linguists also interested in knowing the elements in common in earlier times were languages that came from parent language (proto language). As stated by Kridalaksana (2008), a related language is two or more languages that are derived from the same parent language. This is proved by the discovery of grouped languages known as family language, e.g., Indo-European, Austronesia, etc. The changes and development of language is directly equivalent with the speakers and influenced by the spread of language movement. Related languages originate from one parent-language which was related in the past. The relation can be seen from the time apart and the classification of related languages.

As Antilla (1972) stated, to prove the genetic relationship of a language is initiated with the grouping of languages in a related arrangement. Then, through this grouping, the level of genetic relationship can be seen and also the origin of a language according to the family tree of the language. In addition, Hock (1988) explains that the study of the genetic relationship of a language can be traced through linguistic hierarchy, including lexemes, phonemes, morphemes, and sentences. Lexeme and phonemes aspect are the most often used for comparative language studies. The comparative historical method can be applied to the languages that already have written manuscripts and with spoken languages that are not familiar with the written or script system. In order to carry out a deliberate comparative historical analysis, written texts from two or more languages should be existed to be compared historically with a specific purpose, such as language assemblage, discovery, and pre-construction of the ancient language which derived these languages, and possibly determining the distribution direction and time apart of the languages.

Indonesia is a country with a very diverse language. This is reflected in the variety of languages that people have. According to Sugono (2010), the number of regional languages in Indonesia reaches more than 746 languages. The diversity of regional languages is an invaluable asset that belongs to the Indonesian. It plays a major role in adding vocabulary to the national language. Moreover, the role of regional languages is countering the impact of foreign languages that enter Indonesian. Consequently, it is necessary to take strategic and steps to maintain, preserve, and develop regional language. This research is a small effort to help preserve local languages, especially the researchers' mother tongue language. According to Kridalaksana (2008) regional language is the language used by the native population of an area. Despite being used as a means of communication for the language community, regional languages can be used as a tool for writing or telling regional literary works.

In this research, there are three languages studied, Malay Bengkulu Language, Rejang Language, and Javanese Language. These three languages are Proto-Austronesian. Malay Bengkulu Language and Rejang Language are geographically close as located in Bengkulu Province. There are several backgrounds in determining the language studied. Bengkulu Malay Language is the mother tongue of the researcher, so it is easier to understand and analyze the data obtained from informants. The studied languages in this research are included as the Malay family. Tadmor (2007) stated that the origin of Malay Language originated from South Sumatra. Bengkulu Province is the development area of South Sumatra region itself, so the language is in contact. The historian and palaeontologist Georges Coedes stated that in the Sriwijaya empire, Old Malay inscriptions were found in the trade routes such as South Sumatra, Java, Bangka Belitung, and Philippines. Because of this statement, the researcher assumes that the language in Bengkulu which was formerly part of the division of South Sumatra has a genetic relationship with Javanese. This social and historical factor is also supported by the phonetic similarities that are found between languages. This can be seen from the similarity of the vocabulary of BMB (Bengkulu Malay Language)-BR (Rejang Language) in the form of word “diri” which is ‘tegak’, vocabulary of BMB-BJ (Javanese Language) in the form of word “lelaki” which is ‘lanang’, and the vocabulary of BR-BJ in the form of word merah which is ‘abang’.

The research about language has been conducted a lot in Indonesia. Also, there are several researchers conducting research about the genetic relationship of languages. Previous study conducted by Tiani (2010) with title “Korespondensi Fonemis Bahasa Bali dan Bahasa Sasak”. The result shows regularity of sound between segments in several glosses and can be seen in the reflection of the phonemic correspondence for the vowels in both languages. In her other research, Tiani (2018) examined phonemic correspondence between Bahasa Palembang (BP) and Bahasa Riau (BR). From the analysis, it is concluded that the languages examined are from one family of languages, which is Austronesian. Fitrah, et. al (2017) also conducted a research entitled “Kekerabatan Bahasa-bahasa Etnis Melayu, Batak, Sunda, Bugis, dan Jawa di Provinsi Jambi”. The outcome from the research concludes that the ethnic languages are varied, containing 5 variants of vowels and 19 variants of consonants. Suparman (2018) also conducted research under the title “Glottokronologi Bahasa Rampi dan Bahasa Wotu”. The result shows that two languages being examined are in genetic relationship. This is proved by 17% percentage which means the languages are from one family of languages.

From all the background mentioned above, the research about genetic relationships in Bengkulu and Javanese have not been conducted yet. The fact that the languages in Indonesia are in the same family, it should get better attention related to the genetic relationship between languages by examining the extent of relation in several regional languages. In this present study, the researcher aimed to 1) Examine the genetic relationship of Bengkulu Malay, Rejang, and Javanese language by using percentage of cognate and isolated time of them, 2) Examine the phonemic correspondence of the language studied.

2. Method

This present research used quantitative and qualitative approaches. In a qualitative approach, this research is carried out through the construction of cognate devices and phonemic correspondence which convince the existence of a genetic

relationship between BMB, BR, and BJ. In a quantitative approach, this research used lexicostatistical and the glottochronology between three languages to examine genetic relationships, isolated time, and language years. Lexicostatistical is a technique to classify languages that tends to prioritize statistical observation of words (lexicons), then try to determine the grouping based on the percentage of similarities and differences between a language and another language. In addition, this study also used the glottochronology method which is a very useful tool for reconstructing the time when language separation first occurred. Knowing the genetic relationship of languages in the form of many basic word equations helps determine when the separation of two languages occurs. Furthermore, it can also be seen that the migration patterns of the nations associated with this separation. With the glottochronology method, it can be estimated that the separation time between two languages with the knowing of similarities in vocabulary is between two languages with the largest percentage level of related vocabulary.

The data of the research is in the form of 200 words of Swadesh Vocabulary. The researcher collected the data from the informants of BMB (Bahasa Melayu Bengkulu), BR (Bahasa Rejang), and BJ (Bahasa Jawa) native speakers using the note-taking technique to obtain the data. The technique of collecting the data is by interviewing methods because the data are collected by listening to the use of language informants based on Swadesh vocabulary. This method has basic techniques in the form of listening and proficient techniques. According to Sudaryanto (1993), the listening method is the method in which the data collection is done through the process of listening to the use of the language under study. Sudaryanto (1993) also mentioned that there are five types of data collection, namely tapping techniques, engaging listening techniques proficiently, engaging free listening techniques, recording techniques, and note-taking techniques. The note-taking technique is an advanced technique that is used when applying an observing method. If recording is not carried out, the researcher can record when applying the listening method so that the recording technique is possible if the language under study is the language that is still spoken by the informant. The research steps refer to Dyen (1965) as follows:

1. Collecting basic words (glos), in this study using 200 basic Swadesh vocabularies. Sources of data were obtained from informants who were native speakers of the language studied

2. Count words relatives. Keraf (1990) states that a pair of words will be declared a relative if it fulfils one of the conditions (a) the pair is identical, (b) the pair has a phonemic correspondence, (c) phonetic similarity, or (d) a different phoneme.

3. Add up the percent of cognate. The percentage level of the relationship between BMB, BR, and BJ is calculated using a formula:

$$C = \frac{k}{g} \times 100\%$$

Note:

C = percentage of cognate

K = the number of related vocabularies

G = Number of words studied

4. Calculate the language separation period using this formula:

$$W = \frac{\log C}{2 \log r}$$

Note:

W = isolated time

C = percentage of cognate

r = constant percentage, which 80,5%

log = logarithm

2 = the dividers of the two languages being compared

5. Standard error. This formula is important for showing certainty regarding the split time between the two languages. So, the next calculation must be done using the formula for calculating the error period. Keraf (1990) states that to calculate the error period, a standard error is usually used, which is 70% of the estimated truth. The standard error is calculated by the formula:

$$S = \sqrt{\frac{C(1-C)}{n}}$$

Note:

S = Standard error in percentage of cognate

C = percentage of cognate

n = number of words being compared

6. Calculate the new separation period using this formula:

$$W1 = \frac{\log C1}{2 \log r}$$

Note:

C1 = new percentage of cognate

r = retention (constant percentage in 1000 years)

7. Calculate the separation period of languages with proto (parent) language = W + (W-W1)

3. Results and Discussions

After collecting and analyzing the data based on the procedure, there are several results that can be presented. The first one is the calculation of lexicostatistical and glottochronology of the languages studied and the second one is phonemic correspondence of languages studied.

3.1 Result

a. Lexicostatistical and Glottochronology

After identifying the cognate words from 200 words of Swadesh vocabulary, the next step is to know the genetic relationship between the languages studied using lexicostatistical. As explained in the method above, the numbers of cognate words are calculated using the formula. Here are the calculations of each compared language.

1. BMB-BR (Bengkulu Malay Language-Rejang Language)

From 200 words of Swadesh vocabulary, all of them are considered in both languages. It was found that 101 words are related, while the rest 99 words are not related. The calculation is present below:

$$\begin{aligned}
 C &= \frac{k}{g} \times 100\% \\
 &= \frac{101}{200} \times 100\% \\
 &= 50,5 \% (0.505)
 \end{aligned}$$

The calculation above shows that the percentage of cognate words between BMB and BR is 50,5%. In other words, half of 200 words in BMB-BR from Swadesh vocabulary are cognate. Based on the language classification by Keraf (1991) on Table 1, it can be said that BMB and BR are in family classification.

$$\begin{aligned}
 W &= \frac{\log C}{2 \log r} \\
 &= \frac{\log 0.505}{2 \log 0.805} \\
 &= 1.54 \\
 &= 1.54 \times 1000 \\
 &= 1540 \text{ years}
 \end{aligned}$$

The calculation above shows that the isolated time or separation time between BMB and BR is 1540 years ago. In other words, it can be said that both languages were the same language about 1,5 thousand years ago.

$$\begin{aligned}
 S &= \sqrt{\frac{C(1-C)}{n}} \\
 &= \sqrt{\frac{0.505(1-0.505)}{200}} \\
 &= 0,0353
 \end{aligned}$$

The calculation above shows the standard error that can be found in analyzing cognate words or language studied. After the number of standard errors is known, the new percentage of cognate should be calculated again with adding the percentage of cognate words and the standard error. So, the result of the new number of cognate words is $0.505 + 0.0355 = 0.5403$. Then, this number will be used to calculate the new separation time of languages.

$$\begin{aligned}
 W1 &= \frac{\log C1}{2 \log r} \\
 &= \frac{\log 0.5403}{2 \log 0.805} \\
 &= 1,419 \times 1000 \\
 &= 1419 \text{ years} \\
 S &= 1540 - 1419 \text{ years} \\
 &= 121 \text{ years}
 \end{aligned}$$

$$\begin{aligned}
 \text{Isolated time} &= (1540+121) - W1 \\
 &= 1661 - 1419 \text{ years ago} \\
 &= 360 - 602 \text{ M}
 \end{aligned}$$

So, from all the calculations above, the isolated time of BMB and BR can be described as; a) Two languages are isolated between 1540-1419 years ago or 360 – 602 M; b) based on the percentage of cognate which is 50,5%. It can be said that BMB (Bengkulu Malay Language) and BR (Rejang Language) are categorized as family.

2. BMB-BJ (Bengkulu Malay Language-Javanese Language)

From 200 words of Swadesh vocabulary, only one of them is not considered in one language, so only 199 words are considered. It was found that 64 words are related, while the rest 135 words are not related. The calculation is present below:

$$\begin{aligned}
 C &= \frac{k}{g} \times 100\% \\
 &= \frac{64}{199} \times 100\% \\
 &= 32,16 \% (0.321)
 \end{aligned}$$

The calculation above shows that the percentage of cognate words between BMB and BJ is 32,16%. In other words, not even half of 200 words in BMB-BJ from Swadesh vocabulary are cognate. Based on the language classification by Keraf (1991) on Table 1, it can be said that BMB and BR are in stock classification.

$$\begin{aligned}
 W &= \frac{\log C}{2 \log r} \\
 &= \frac{\log 0.321}{2 \log 0.805} \\
 &= 2,62 \\
 &= 2,62 \times 1000 \\
 &= 2620 \text{ years}
 \end{aligned}$$

The calculation above shows that the isolated time or separation time between BMB and BJ is 2620 years ago. In other words, it can be said that both languages were the same language about 2,6 thousand years ago.

$$\begin{aligned}
 S &= \sqrt{\frac{C(1-C)}{n}} \\
 &= \sqrt{\frac{0.321(1-0.321)}{199}} \\
 &= 0.033
 \end{aligned}$$

The calculation above shows the standard error that can be found in analyzing cognate words or language studies. After the number of standard errors is known, the new percentage of cognate should be calculated again with adding the percentage of cognate words and the standard error. So, the result of the new number of cognate words is 0.354. Then, this number will be used to calculate the new separation time of languages.

$$\begin{aligned}
 W1 &= \frac{\log C1}{2 \log r} \\
 &= \frac{\log 0.354}{2 \log 0.805} \\
 &= 2,398 \times 1000 \\
 &= 2398 \text{ years} \\
 S &= 2620 - 2398 \\
 &= 222 \text{ years} \\
 \text{Isolated Time} &= (2620 + 222) - W1 \\
 &= 2842 - 2398 \text{ years ago} \\
 &= 821 - 377 \text{ BM}
 \end{aligned}$$

So, from all the calculations above, the isolated time of BMB and BR can be described as; a) Two languages are isolated between 2620-2398 years ago or 821 – 377 BM; b) based on the percentage of cognate which is 32,16. It can be said that BMB (Bengkulu Malay Language) and BJ (Javanese Language) are categorized as stock.

3. BR-BJ (Rejang Language-Javanese Language)

From 200 words of Swadesh vocabulary, only one of them is not considered in one language, so only 199 words are considered. It was found that 58 words are related, while the rest 141 words are not related. The calculation is present below:

$$\begin{aligned}
 C &= \frac{k}{g} \times 100\% \\
 &= \frac{58}{199} \times 100\% \\
 &= 29,14 \% (0.291)
 \end{aligned}$$

The calculation above shows that the percentage of cognate words between BR and BJ is 29,14%. In other words, not even half of 200 words in BMB-BJ from Swadesh vocabulary are cognate. Based on the language classification by Keraf (1991) on Table 1, it can be said that BMB and BR are in stock classification.

$$\begin{aligned}
 W &= \frac{\log C}{2 \log r} \\
 &= \frac{\log 0.291}{2 \log 0.805} \\
 &= 2,851 \\
 &= 2,851 \times 1000 \\
 &= 2851 \text{ years}
 \end{aligned}$$

The calculation above shows that the isolated time or separation time between BMB and BJ is 2851 years ago. In other words, it can be said that both languages were the same language about 2,8 thousand years ago.

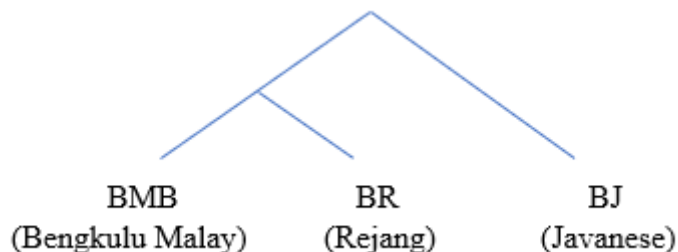
$$\begin{aligned}
 S &= \sqrt{\frac{C(1-C)}{n}} \\
 &= \sqrt{\frac{0.291(1-0.291)}{199}} \\
 &= 0.032
 \end{aligned}$$

The calculation above shows the standard error that can be found in analyzing cognate words or language studied. After the number of standard errors is known, the new percentage of cognate should be calculated again with adding the percentage of cognate words and the standard error. So, the result of the new number of cognate words is 0.323. Then, this number will be used to calculate the new separation time of languages.

$$\begin{aligned}
 W1 &= \frac{\log C1}{2 \log r} \\
 &= \frac{\log 0.323}{2 \log 0.805} \\
 &= 2,61 \times 1000 \\
 &= 2610 \text{ years} \\
 S &= 2851 - 2610 \\
 &= 241 \text{ years} \\
 \text{Isolated Time} &= (2851 + 241) - W1 \\
 &= 3092 - 2610 \text{ years ago} \\
 &= 1071 - 589 \text{ BM}
 \end{aligned}$$

So, from all the calculation above, isolated time of BR and BJ can be described as; a) Two languages are isolated between 2851-2610 years ago or 1071 – 589 BM; b) based on the percentage of cognate which is 29,14 %, It can be said that BR (Rejang Language) and BJ (Javanese Language) are categorized as stock.

In studying the genetic relationship of three languages, the family tree of languages is essential to be presented. The results show the genetic relationship between BMB-BR is closer than the genetic relationship of BMB-BJ and BR-BJ. This also happened with the isolated time, which is when BMB-BR happened more recently than BMB-BJ and BJ-BR. It appears that the relationship of BMB is closer with BR rather than BJ. This result can be presented in family tree of language below:



b. Phonemic Correspondence

1. Bengkulu Malay Language-Rejang Language (BMB-BR)

Phonemic correspondence pair /ε-e/

The phoneme /ε/ at the prefix and middle of the ultima syllable in BMB corresponds to the phoneme /e/ in BR. The correspondence pair /ε-e/ in BMB and BR appears at the ultima syllable

followed by consonant. The consonants that follow this correspondence include /ʔ/, /n/, dan /t/. The table below shows the correspondence /ɛ-e/ in BMB and BR.

Glos	BMB	BR	Rules
dengan	[kɛʔ]	[ŋen]	/ɛ-e/-C#
ikat	[ikɛʔ]	[nɛ'ket]	/ɛ-e/-C#
lihat	[liɛʔ]	[kəmɔleʔ]	/ɛ-e/-C#

Phonemic correspondence pair /a-ə/

The phoneme /a/ at the middle of the ultima syllable of BMB corresponds to the phoneme /ə/ at the middle of the ultimate syllable of BR. The correspondence pair /a-ə/ in BMB followed by consonant /n/. However, the exception happens in the pair of words [karno] and [kəno]. The correspondence /a-ə/ happens at the middle of the penultima syllable followed by consonant /r/. the table below shows the correspondence /a-ə/ in BMB and BR.

Glos	BMB	BR	Rules
bulan	[bulan]	[bulən]	/a-ə/-C#
kanan	[kanan]	[kanən]	/a-ə/-C#
karena	[karno]	[kəno]	/a-ə/C-#
tajam	[tajam]	[tajəm]	/a-ə/-C#

Phonemic correspondence pair /o-i/

The phoneme /o/ at the end of ultima syllable of BMB corresponds to the phoneme /i/ at the middle of ultima syllable of BR. In other words, correspondence pair /o-i/ in BMB and BR happens at the end of word. The table below shows the correspondence /o-i/ in BMB and BR.

Glos	BMB	BR	Rules
Bungo	[bungo]	[bungi]	/o-i/-#
dua	[duo]	[dui]	/o-i/-#
tua	[tuo]	[tui]	/o-i/-#

Phonemic correspondence pair /r-h/

The phoneme /r/ at the prefix and suffix of ultima syllable of BMB corresponds to the phoneme /h/ at the prefix and suffix of ultima syllable of BR. It can be said that the correspondence pair /r-h/ appears at the middle of the word followed by vocal /u/ and consonant /b/. the table below shows the correspondence /r-h/ in BMB and BR.

Glos	BMB	BR	Rules
lurus	[lurus]	[luhus]	/r-h/V-#
terbang	[terban]	[tehban]	/r-h/C-#

Phonemic correspondence pair /u-o/

The phoneme /u/ at the suffix and middle of ultima syllable of BMB corresponds to the phoneme /o/ at the suffix and middle of ultima syllable of BR. This correspondence pair happens in ultima syllable followed by phoneme /a/, /t/, dan /r/. Moreover, the correspondence pair /u-o/ also appears at the end of penultima syllable of BMB and BR. The table below shows the correspondence /u-o/ in BMB and BR.

Glos	BMB	BR	Rules
buah	[buah]	[boaʔ]	/u-o/V-#
kamu	[kau]	[ko]	/u-o/-#
lutut	[lutut]	[lotot]	/u-o/-C#
telur	[təlur]	[tənoa]	/u-o/-C#

tidur	[tidur]	[tidoa]	/u-o/-C#
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2. Bengkulu Malay Language-Javanese Language (BMB-BJ)

Phonemic correspondence pair /u-ʊ/

The phoneme /u/ at the prefix and middle of ultima syllable of BMB corresponds to the phoneme /ʊ/ at the prefix and middle of ultima syllable of BJ. This correspondence pair happens in ultima syllable followed by consonant such as /ŋ/, /t/, /n/, dan /s/. The table below shows the correspondence /u- ʊ/ in BMB and BJ.

Glos	BMB	BJ	Rules
hidung	[iduŋ]	[iɾoŋ]	/u- ʊ/-C#
rambut	[rambut]	[rambʊt]	/u- ʊ/-C#
gunung	[gunuŋ]	[gunoŋ]	/u- ʊ/-C#
tahun	[taun]	[taʊn]	/u- ʊ/-C#
usus	[usus]	[usoʊs]	/u- ʊ/-C#

Phonemic correspondence pair /i-ɪ/

The phoneme /i/ at the middle of ultima syllable of BMB corresponds to the phoneme /ɪ/ at the middle of ultima syllable of BJ. This correspondence pair appears at the middle of ultima syllable followed by some consonant such as, /ŋ/, /t/, /r/, /ʔ/, dan /s/. The table below shows the correspondence /i- ɪ/ in BMB and BJ.

Glos	BMB	BJ	Rules
daging	[dagiŋ]	[dagiɲ]	/i- ɪ/-C#
cacing	[caciŋ]	[caciɲ]	/i- ɪ/-C#
kulit	[kulit]	[kuliɪt]	/i- ɪ/-C#
kuning	[kuniŋ]	[kuniɲ]	/i- ɪ/-C#
langit	[laŋit]	[laŋiɪt]	/i- ɪ/-C#
mikir	[mikir]	[mikiɪr]	/i- ɪ/-C#
tarik	[tariʔ]	[tariɪʔ]	/i- ɪ/-C#
tipis	[tipis]	[tipiɪs]	/i- ɪ/-C#

Phonemic correspondence pair /o-ɔ/

The phoneme /o/ at the end of ultima syllable of BMB corresponds to the phoneme /ɔ/ at the end of ultima syllable of BJ. In other words, the correspondence /o-ɔ/ in BMB and BJ happens at the end of word. The table below shows the correspondence /o-ɔ/ in BMB and BJ.

Glos	BMB	BJ	Rules
lima	[limo]	[limɔ]	/o-ɔ/-#
tua	[tuo]	[tuɔ]	/o-ɔ/-#

Phonemic correspondence pair /b-w/

The phoneme /b/ at the prefix of penultima syllable of BMB corresponds to the phoneme /w/ at the prefix of penultima syllable of BJ. It can be said that the correspondence pair /b-w/ happens in the beginning of the word. The table below shows the correspondence /b-w/ in BMB and BJ.

Glos	BMB	BJ	Rules
batu	[batu]	[watu]	/b-w/V-#
bulan	[bulan]	[wulan]	/b-w/V-#

bulu	[bulu]	[wulu]	/b-w/V-#
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3. Rejang Language-Javanese Language (BR-BJ)

Phonemic correspondence pair /u-ʊ/

The phoneme /u/ at the middle of ultima syllable of BR corresponds to the phoneme /ʊ/ at the middle of ultima syllable of BJ. This correspondence pair /u-ʊ/ also happens at the prefix of ultima syllable of BR and BJ. This pair happens at the ultima syllable followed by consonant /ŋ/, /n/, and /s/. The table below shows the correspondence /u-ʊ/ in BR and BJ.

Glos	BR	BJ	Rules
gunung	[gunuŋ]	[gunuŋ]	/u-ʊ/-C#
tahun	[taun]	[taʊn]	/u-ʊ/-C#
usus	[usus]	[usʊs]	/u-ʊ/-C#

Phonemic correspondence pair /i-ɪ/

The phoneme /i/ at the middle of ultima syllable of BR corresponds to the phoneme /ɪ/ at the middle of ultima syllable of BJ. This correspondence pair /i-ɪ/ happens at the ultima syllable followed by consonant. The consonant are /t/, /ŋ/, /ʔ/, and /s/. The table below shows the correspondence /i-ɪ/ in BR and BJ.

Glos	BR	BJ	Rules
kulit	[kulit]	[kʊlɪt]	/i-ɪ/-C#
kuning	[kuniŋ]	[kʊniŋ]	/i-ɪ/-C#
tarik	[tariʔ]	[tʰariʔ]	/i-ɪ/-C#
tipis	[tipis]	[tʰipɪs]	/i-ɪ/-C#

Phonemic correspondence pair /ə-a/

The phoneme /ə/ at the middle of ultima syllable of BR corresponds to the phoneme /a/ at the middle of ultima syllable of BJ. This correspondence pair /ə-a/ happens at the ultima syllable followed by consonant. The consonant are /n/ and /s/. The table below shows the correspondence /ə-a/ in BR and BJ.

Glos	BR	BJ	Rules
jalan	[dalən]	[dalan]	/ə-a/-C#
panas	[panəs]	[panas]	/ə-a/-C#
tangan	[tanjən]	[tanjan]	/ə-a/-C#

3.2 Discussion

The lexicostatistical analysis reveals that Bengkulu Malay (BMB) and Rejang (BR) share 50.5% cognate vocabulary from the 200 Swadesh list, classifying them at the family level per Keraf's (1991) criteria (>45% cognates), while BMB-Javanese (BJ) at 32.16% and BR-BJ at 29.14% fall into stock classification (<36%). Glottochronological estimates further indicate a recent divergence for BMB-BR (1540-1419 years ago, or 360-602 CE), compared to BMB-BJ (2620-2398 years ago, 821-377 BCE) and BR-BJ (2851-2610 years ago, 1071-589 BCE), suggesting BMB and BR remained in closer contact post-proto-Austronesian split. These findings align with geographical proximity in Bengkulu Province, where reduced migration barriers preserved higher lexical retention, as predicted by comparative historical linguistics principles (Hock, 1988).

Phonemic correspondences provide qualitative support, evidencing regular sound changes typical of Western Austronesian subgrouping. Notable patterns include $u > \emptyset$ in BMB-BR (e.g., *bua*h 'fruit' > *bo*a; *tidur* 'sleep' > *tid*o), $i > \emptyset$ in BMB-BJ intervocalically (e.g., *daging* 'meat' > *dag*; *kuning* 'yellow' > *kun*), and $r > h$ in BMB-BR (e.g., *lurus* 'straight' > *lu*hus; *terbang* 'fly' > *te*hba). These conditioned shifts mirror vowel gradations in regional studies, such as Tiani's (2018) Palembang-Riau correspondences and Mahnunah & Putri's (2018) Simalungun-Rejang analysis, reinforcing proto-form reconstructions for Sumatra-Malayan lects.

The family tree derived from cognate percentages positions BMB-BR as a tight subgroup diverging later from a shared proto-stock with BJ, consistent with Sriwijaya-era trade networks linking South Sumatra to Java (Coedès, as cited in Tadmor, 2007). This closer BMB-BR affinity echoes Afria et al.'s (2020) 40-50% cognates among Palembang-Basemah variants but contrasts with deeper splits in Suparman (2018) Rampi-Wotu (17%), highlighting Sumatra's dialect continuum versus Javanese divergence. Unlike Juliana (2013) Mandailing-Jawa-Aceh (mixed stock-family), this study fills a gap by quantifying Bengkulu lects' ties, supporting Ermanto's (2017) proto-Austronesian traces in Sumatra.

Geographical influence on divergence rates validates the hypothesis: proximate BMB-BR exhibit shallower time depths, while Java's separation amplified drift, as seen in lower cognates. Implications extend to language preservation, underscoring Bengkulu's linguistic heritage amid globalization, and pave the way for proto-reconstructions using expanded datasets. Limitations include glottochronology's uniform retention assumption ($r=0.805$), critiqued for borrowing sensitivity (Swadesh, 1955; Dyen, 1965), and reliance on 200-word lists—future research should incorporate computational phylogenetics

4. Conclusion

The result of the research above shows the genetic relationship of three languages studied such as Bengkulu Malay Language (BMB), Rejang Language (BR), and Javanese Language (BJ). From all 200 words of Swadesh vocabulary, all of them are considered in BMB and BR. While, only one of 200 words is not considered. It is found that BMB and BR is categorized as family since the percentage of cognates is 50,5% or half of them. The isolated time found of BMB and BR is 1540-1419 years ago or 360 – 602 M. While, for BMB and BJ is categorized as stock since the percentage of cognate is 32,16% or not even half of them. The isolated time found for BMB and BJ is 2620-2398 years ago or 821 – 377 BM. Meanwhile, for BR and BJ is categorized also as stock since the percentage of cognates is only 29,14% or not even half of the total. The isolated time found for BR and BJ is 2851-2610 years ago or 1071 – 589 BM. From all this calculation, it can be known that the genetic relationship between BMB and BR is closer than the genetic relationship of BMB-BJ and BR-BJ. This can happen because the geographical relation of BMB and BR is closer than the other two. This also proves the truth of comparative historical linguistic logic which states that if the geographical location is closer, the languages between the areas are more related.

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