

Segmental Phonemes Conservation in Pattae Language, Indonesia

Jerniati I.

Research Center for Language and Literature Preservation, National Research and Innovation Agency, Jakarta, Indonesia

Herianah

Research Center for Language, Literature, and Community, National Research and Innovation Agency, Jakarta, Indonesia

Ratnawati

Research Center for Language, Literature, and Community, National Research and Innovation Agency, Jakarta, Indonesia

Andi Indah Yulianti

Research Center for Language and Literature Preservation, National Research and Innovation Agency, Jakarta, Indonesia

Musayyedah

Research Center for Language and Literature Preservation, National Research and Innovation Agency, Jakarta, Indonesia

Syamsurijal

Research Center for Language and Literature Preservation, National Research and Innovation Agency, Jakarta, Indonesia

Abstract—This study focused on conserving the speech sound system of the Pattae language. It employed speaking and listening methods. The result indicates that the vowel sounds are ten, the consonant sounds are eighteen, and the diphthongs are [aw] and [ay]. The classifications of vowel sound characters are six phonemes, they are /a/, /i/, /u/, /e/, /ɔ/, and /o/, and long vowel phonemes are /a:/, /i:/, /u:/, and /o:/. The long vowel phonemes are insufficient supporting data. These vowels can be distributed in a word's initial, middle, and final positions, except /e/, which is not indicated in the initial position. Besides, the classification of consonant sound characters shows eighteen phonemes, including /p/, /b/, /t/, /d/, /m/, /n̄/, /n/, /l/, /k/, /g/, /ŋ/, /r/, /s/, /j/, /c/, /ʔ/, /y/, and /w/. Three consonants are distributed in all positions, including /n/, /l/, and /k/; four are distributed in the final, namely /n/, /l/, /k/, and /ʔ/; twelve are distributed in the initial and middle, such as /p/, /b/, /t/, /d/, /m/, /n̄/, /k/, /g/, /ŋ/, /r/, /s/, and /w/; and two are distributed in the middle, involving /y/ and /j/.

Index Terms—segmental phoneme, Pattae language, language conservation

I. INTRODUCTION

The local languages of each tribe become part of communities. However, the ability to bequeath the languages to the next generations significantly affects language conservation. If this role is always fulfilled, children (second generation) will become active language users since they consistently use their local languages. Therefore, the role of parents is quite dominant as inheritors of their local languages to their children. If the languages do not bequeath, they probably change as language attitudes change, resulting in language conservation, language shift, language change, and language extinction or death. In connection with this situation, local language vitality is considered essential. It links to saving, conserving, managing, and developing languages. Therefore, collecting, recording, and studying a local language needs to be conducted (Aritonang, 2016). It agrees with several researches (Bocale, 2019; Bownern, 2017; Ong, 2021; Singh et al., 2021; Soo Ying et al., 2015).

Concerning the speed of language extinction between generations of language speakers, it indicates that if a language is only used by speakers at the age of 25 and above, but the speakers below 25 no longer use it, the next 75 years – three generations – the language is endangered. If a language is actively used only by speakers aged 50 and above, but the speakers below 50 are not, the next 50 years – two generations – the language is probably extinct. If a language is actively used by speakers at the age of 75 and above, but the speakers under 75 are not fluent, particularly in the family

domain, the next 25 years – one generation – the language is (probably) endangered. These hypotheses are formulated explicitly as the younger the speakers, the less fluent the speakers are in using their mother tongue for daily conversation, and the language is faster to be endangered. The period of language extinction will be faster if the number of language use scopes and domains in daily communication is reduced or the decrease of language use in some domains, particularly the family one, is higher (Ibrahim, 2011).

Similarly, a local language suffers retrogression because it has no function in the public sphere. This lack of function causes a decline in the benefits and prestige of the local language. As a result, the local language, which has served as the language of the family and the community, is gradually abandoned, and its speakers switch to the dominant language used in the public sphere (Suwarno, 2017).

Indonesia is the second country with the highest number of language varieties www.ethnologue.com, after Papua New Guinea, with 852 local languages (Siregar, 2017). The survey of the Language Center has so far recorded 718 local languages in Indonesia. Ninety percent of these languages spread in eastern Indonesia, including 62 languages in Sulawesi. Pattae language is one of the local languages in Sulawesi. Communities in some villages in Binuang and Anreapi districts, Polman Regency, West Sulawesi Province use it. The majority of the Pattae community is Muslim. It is represented in their Islamic traditions. Generally, the Pattae community's livelihood is farming, such as rice, corn, coffee, and vegetables.

The Pattae language existence in Polewali Mandar as a part of Pitu Ulunna Salu (PUS) languages was indicated in lexicostatistic and dialect informations (Friberg, 1987). Besides, the area of Pitu Ulunna Salu are Tabulahan, Aralle, Mambi, Bambang, Tantebulahan, Matangnga, and Tabang, and the dialects of PUS are Bumal, Issilita', Bambang Hulu, Salu Mukanan, Pakkau, Melahaan, Pattae, dan Matangnga (Friberg, 1987). In addition, Summer Institute of Linguistics claimed that PUS languages included Bumal, Bambam, Mehala'an-Eastern, Rantebulahan, West Rantebulahan, Pattae, Matangnga, Issilita', Salu Mukanam, and Pakkau (Grimes, 1992).

A study on Pattae language vitality was conducted by researchers at the Language Center in South Sulawesi (Ratnawati et al., 2019). The result showed that the vitality of the Pattae language was 0.63. Based on the criteria of language vitality as measured by average value, Pattae language vitality was included in a range of 0.61-0.80, indicating stability. However, these values potentially decreased, so the effort to conserve language is needed.

Conservation means preservation or protection. According to online KBBI conservation refers to conserving and protecting something regularly to prevent damage and extinction by preserving it (Badan Pengembangan dan Pembinaan Bahasa, 2016). Concerning local languages, conservation refers to an activity conducted to regularly preserve and protect local languages to prevent language breakdown or death. In this context, language conservation is to conserve and develop languages to make speech communities use them. It contains the effort of prevention and improvement of broken language aspects to assure language continuity (Harimansyah et al., 2017; Schultz et al., 2019; Suwarno, 2017).

One of the activities in conserving local languages is managing language systems. Conserving the Pattae language system is required, in terms of the phonological system, as the initial step of protecting and conserving the Pattae language to prevent breakdown or even extinction. The study of Pattae language conservation aimed to describe the specific language system in terms of speech sounds, including vowel and consonant segmental phonemes as well as voiced and voiceless, by finding their minimum pairs. Thus, it was formulated to describe segmental phonemes on vowel-consonant sound classification and Pattae language map and how to describe minimum pairs of vowel-consonant sound classification of the Pattae language.

The result was beneficial for developing linguistic theory (Peterson et al., 2020) and, practically, for describing the speech sound system of Pattae phonology. It was also used for information on managing, developing, and conserving local languages in West Sulawesi. For example, it was used for arranging grammar books and dictionaries as learning sources in schools for teaching local subjects, such as local languages. As a result, local languages will be used in the daily life of children, a generation of Pattae language, and there are no more extinct local languages in West Sulawesi.

II. LITERATURE REVIEW

The theories used in this study are related to phonology and phoneme discovery. Phonology is a linguistic field on how sounds are used systematically in various languages to form words and utterances (Brown, 1997; Katamba, 1996; Sparrow & Miellet, 2002). Phonology is the science of sounds that is functional and one of the linguistic fields of investigating and observing certain speech sounds, as well as function as differentiating minimum meaning in a word (Verhaar, 2004). In addition, phonology is a science studying the basic system of selecting and using speech sounds in the world (Kenstowich & Kisseberth, 1977). All similar languages are context-free (Cerna, 2017). Hence, the regular languages are a proper subset of the linear ones, which are a proper subset of the context-free languages. In other words, the regular languages are under intersection with regular sets. Moreover, phonology is a field in linguistics investigating speech sounds based on their function: phonemic (Kridalaksana, 2013). Also, phonology is a linguistic field investigating and studying sounds (Muslich, 2008). Therefore, phonology is the science of sounds produced by human speech organs.

Sounds, including speech sounds, are vibrations. Vibrations result from an energy working on the mass of an object that becomes the source of the vibrations. They will be realized as a sound if they are strong and passed on to the ears

through the air. Concerning speech sounds, the primary energy source is the airstream flowing from the lungs, while the vibrations are indicated by the movement of specific organs, namely speech organs. The movements of these organs result in differences because of changes in the air cavity between lungs with lips and nostrils (Abercrombie, 1990; Ba'dulu & Herman, 2010; Basir et al., 2018; Masa et al., 2020).

Three organs are involved in producing sounds, including 1) a group of organs in the torso, namely the respiratory system, 2) a group of organs in the esophagus, namely the phonatory system, and 3) a group of organs in the head namely the articulatory system. A place where speech sounds are produced is an articulation place; the process of producing them is the articulation process, and the tool used in producing them is an articulation tool or articulator (Abercrombie, 1990; Ba'dulu & Herman, 2010).

This study also employed theories of phoneme discovery and argumentation (Richards & Rodgers, 2014) using a procedure to discover (1) minimum pairs (contrast), (2) phoneme distribution, and (3) free variation. If two different sounds are in a contrasting position, these sounds are two phonemes. If two not-different sounds are in a complementary distribution or free variation, these sounds are two phonemes.

In line with Bloch dan Trager, minimum pairs are a set of similar words, except in one sound (Verhaar, 2004). Minimum pairs refer to every two words that only differ from a different sound in one position. These pairs are used in traditional phonology to determine sound status as phonemes, indicating that initial sounds in all words are phonemes in every language. This theory then focuses on contrasts in similar environments. If two sounds are in different environments (similar environments), the theory as suggested by Pike (1947) is used. According to Pike, the procedure of phoneme discovery showed that if two sounds are in similar environments, these sounds are two phonemes (L., 2015). In addition, once acquired, phonemic categories influence the perception of speech sounds (Maye & Gerken, 2001). For instance, English speakers immediately recognize pear and bear as different words. This immediate realization is independent of the fact that these two words have different meanings since English will also report that nonsense words like *bove* and *pove* are different, although neither word means anything.

In linguistics, phonemes in each language are divided into segmental and suprasegmental. Segmental phonemes are the ones in which their existence can be analyzed. The word segmental is an adjective derived from the noun segment (Unubi, 2019). In other words, a segment in speech is any of the separate units that occur in a sequence of sounds, which can be broken down into phonemes, syllables, or words through speech segmentation. Segments are called discrete because they are separate and individual, such as consonants and vowels, and occur in a distinct temporal order. Segmental phonemes consist of vowels and consonants (Octaviana & Ramadhani, 2021). The dichotomy of vowel-consonant is the most basic for phonetic classification. If the articulation is a string of opening and closing sound channels, vowels are suggested to be open steps of air flowing freely. At the same time, consonants with some obstructions have more than one phase closed by the blocked outgoing air. Based on the perception side, vowels are louder than consonants. Vowels have some intonational stress and pitch characteristics and are included as sounds closest to the music. They are the core of syllables. A syllable usually consists of vowels with or without one or more consonants' surroundings (Schane, 1973).

III. RESEARCH METHOD

The method used to obtain the data required in this study was the speaking-listening methods, an interviewer and interviewee are in contact to do a conversation, with the basic technique of *pancing* (an interview with natural conversation) and advanced techniques of *cakap semuka* (interview technique with face-to-face interactive conversation), *cakap taksemuka* (indirect interview), and recording-taking note (Nagy, 2020; Richards & Rodgers, 2014; Sudaryanto, 1993). This study required respondents to be Pattae language native speakers as the research subject to obtain valid data (Alfianika, 2018).

A. Instrument

The instrument was arranged following the research focus. While this study focused on the conservation speech sound system, it utilized the instrument, namely 200 vocabulary words of basic Swadesh and 200 vocabularies of essential culture. The main instruments were the researchers themselves. Hence, the researchers played as the active instruments in the conversation process (McDonald & Gao, 2019; Tseng et al., 2020; Wang & Zhan, 2020; Wibowo, 2017).

B. Data and Source of Data

The data were linguistic data from local language utterances used by native communities. They were obtained through the instrument of 200 vocabularies of each basic Swadesh and essential culture by involving 40 respondents and three informants. The respondents were divided into three observation points, namely Batetangga Village, Binuang District, with as many as 16 respondents. Kuajang Village had as many as 13 respondents, and Anreapi Urban Village had as many as 11 respondents.

C. Data Collection Techniques

The data collection techniques were elicitation: conducted by the researchers asking questions directly and orderly to respondents and respondents answering them with simple, straightforward, and natural utterances; recording: conducted by recording the informants' and respondents' utterances, with instruments (question lists of basic Swadesh and basic culture vocabularies) or without instruments to obtain additional data; and note-taking; conducted by recording linguistic data found while obtaining the data and analyzing the data.

Filtering local language data needs respondents who meet the suggested requirements (Mahsun, 2014) as follows:

- 1) being male or female,
- 2) being 25 -65 years old (not senile),
- 3) being parents, wives, or husbands who were born and grew up in the related villages as well as rarely or never leaving the villages,
- 4) having an academic degree in elementary school to junior high school,
- 5) having middle social status (not low or high), as expected not to have high mobility,
- 6) being farmers or laborers,
- 7) being positive of isolects and their communities,
- 8) being able to speak Indonesian,
- 9) being physically and mentally healthy means that respondents are not disabled to speak and have a sharp hearing to catch questions appropriately, while being mentally healthy means not crazy or senile.

D. Data Analysis Techniques and Procedures

Data analysis procedures are based on the structural analysis model as follows.

- 1) The collected data were transcribed phonetically in accordance with IPA (The International Phonetic Alphabet).
- 2) Vowel-consonant sounds were classified and described in the vowel-consonant map.
- 3) Minimum pairs, both suspicious contrast in the same environments and contrast in similar environments determined Pattae phonemes) sounds.
- 4) Syllable patterns and their phoneme distribution were determined.
- 5) The structures of word division were described.
- 6) The patterns of word division were described.

IV. RESULTS

A. Segmental Sound System of Pattae Language

The speech sound system investigated is segmental phonemes of vowels and consonants and descriptions of Pattae phonemes. Based on the data, generally, there are two types of speech sounds, namely vowels and consonants, as well as diphthongs as included in vowels. They are represented in the following table.

TABLE 1
SOUNDS OF PATAE LANGUAGE

Vowel	Consonant	Diphthong
[i]	[b]	[a ^u]
[i:]	[p]	[a ^u]
[u]	[t]	
[u:]	[d]	
[a]	[k]	
[a:]	[g]	
[ɛ]	[ʔ]	
[ɛ:]	[m]	
	[n]	
	[ŋ]	
	[n]	
	[s]	
	[c]	
	[j]	
	[l]	
	[r]	
	[w]	
	[y]	

Table 1 shows that there are vowels, consonants, and diphthongs. Vowels consist of 10 sounds, namely [i], [i:], [u], [u:], [e], [ɛ], [a], [a:], [o], and [o:]. Besides, consonants are divided into eighteen sounds, namely [p], [b], [t], [d], [k], [g], [c], [j], [s], [m], [n], [ŋ], [n], [s], [l], [r], [w], and [y]. Moreover, diphthongs include [aw] and [ay]. These vowels, consonants, and diphthongs are elaborated in the following.

Vowel sounds are speech sounds in which the airstream has no obstructions. Like other languages, the Pattae language also has vowels following three classification factors. First, vowel sounds are classified based on the height of the tongue, namely high, medium, and low sounds. Second, they are classified based on the back and forth of the tongue,

including front, center, and back sounds. Third, they are classified based on lip shapes, consisting of unanimous and nonunanimous. These classification factors are shown in the following table.

TABLE 2
VOWELS OF PATTAE LANGUAGE

	Front	Center	Back
High	i i:		u u:
Medium	e ε		o o:
Low		a a:	

Based on the height of the tongue

1. High sound: [i] and [u]
 - a. [lindo] 'forehead'
 - b. [ura?] 'tendon'
2. Long high sound: [i:] and [u:]
 - a. [i: si] 'tooth'
 - b. [cikku: du] 'to spit'
3. Medium sound: [e], [ε], and [o]
 - a. [are] 'chin'
 - b. [ekko?] 'tail'
 - c. [oto?]' 'to rise.'
4. Long medium sound: [o:]
 - [bo: ko] 'waist'
5. Low sound: [a]
 - [are] 'chin'
6. Long low sound: [a:]
 - [ba:ra?] 'west'

Based on the back and forth of the tongue

7. Front sound: [i] and [e]
 - a. [mirimiri] 'ankle'
 - b. [tekeq] 'pack horse.'
1. Center sound: [a]
 - [ate] 'heart'
2. Back sound: [o] and [u]
 - a. [sola] 'friend'
 - b. [uru] 'beginning'

Based on lip shapes

1. Unanimous sound: [o] and [u]
 - a. [olokolo] 'animal'
 - b. [ulu] 'head'
2. Nonunanimous sound: [i], [e], and [a]
 - a. [iti?] 'that'
 - b. [beke] 'goat,'
 - c. [aka] 'what'

Diphthongs

In the Pattae language, diphthongs are limited, as follows.

For example:

- a. /ai/ : [u^wai] 'water,' [ala^yi] 'take.'
- b. /au/ : [a^wu], 'dust'
- c. /ua/ : [tilu^wa] 'vomit.'

The example above shows one sound produced from two vowels in one syllable. These kinds of vowels are diphthongs. When these vowels are produced by an articulation tool, namely the tongue, their initial positions differ from their finals. These differences relate to tongue movements, such as the height of the tongue and its structure.

TABLE 3
DISTRIBUTION OF PATTAE LANGUAGE

Sound	Initial	Middle	Final
[a]	[ala] 'to take' [are] 'chin' [allo] 'sun'	[sae] 'to come' [pɪʔak] 'to cut' [kajok] 'to scratch'	[lila] 'tongue' [bua] 'fruit' [sola] 'friend'
[a:]	[a: lai] 'to take' [a: i] 'dissappointed' [a:su] 'dog'	[da:u] 'do not' [paŋa: la] 'forest' [bara:na?] 'violent.'	[hamma:] 'Gosh! [anna:] 'to save' [narua:] 'contact'
[i]	[illoŋ] 'nose' [indo] 'mother' [ipa?] 'brother/ sister/ cousin-in-law' [i:komo]	[majo] 'green' [sia] 'salt' [piso] 'knife'	[boŋi] 'night' [putti] 'banana' [bassi] 'iron'
[i:]	[i: si] 'tooth'	[masi: gi] 'mosque' [ari: wi?] 'afternoon' [tumbi:riŋ] 'slant'	[fissi:] 'meat' [bati:] 'clump' [sitalli:] 'brotherhood'
[u]	[umbo] 'bee' [uran] 'rain' [ura?] 'tendon'	[putti] 'banana' [[bukka] 'to open' [rukka] 'noisy'	[a"u] 'grey' [tau] 'person' [timbu] 'bribe'
[u:]		[cakku:ru] 'shaving' [cimu:ruk] 'to dive' [cikku: du] 'to spit'	[datu:] 'middle finger' [rumbu:] 'to touch'
[ɛ]	[ekko?] 'tail' [ekɛ] ' [elo?] 'saliva'	[bɛso] 'to pull.' [rɛkɛŋ] 'to calculate' [kɛla?] 'if'	[tokkɛ] 'gecko' [kallɛ] 'gum' [bɛkɛ] 'goat'
[e]		[carepa] 'dirty' [beni:] 'to give' [patei] 'to kill'	[are] 'chin' [kasalle] 'big' [paŋɛ] 'thigh'
[o]	[ota?] 'brain' [olokolok] 'animal' [oto] 'car'	[bottiŋ] 'to marry' [bosi] 'rotten' [kona] 'cause'	[iko] 'you' [lindo] 'forehead' [tuo] 'to live' [appo] 'grandchild'
[o:]	[o: le] 'oh, yes'	[leso: an] 'wrist' [so:roŋ] 'to push' [bo: ko] 'back'	[kisaro:] 'cooperate' [timo:] 'dry season' [dio:] 'there'

Based on Table 3, vowel sounds in the Pattae language are ten. One of them cannot be in the initial position, namely [e], and the rest can be in all positions. However, these vowel sounds are not ten phonemes. As a result, there is a need to verify vowel phonemes as described in the following.

B. Verification of Vowel Phoneme

Verifying the Pattae language vowel phonemes is conducted by using phoneme pairs in minimum pairs.

TABLE 4
VERIFICATION OF MINIMAL PAIRS

No.	Phoneme	Word Example	Meaning
1.	/i/ and /e/	/iko?/ /ekko?/	You To sit
2.	/a/ and /o/	/bilav/ /billon/	To calculate To open
3.	/o/ and /u/	/tallo/ /tallu/	Egg Three
4.	/e/ and /o/	/are/ /aro/	Chin Chest
5.	/a/ and /u/	/tallu/ /tulu/	Three Rope
6.	/i/ and /o/	/isi/ /iso/	Tooth To suck
7.	/o/ and /ɛ/	/atɛ/ /ato/ /aro/ /arɛ/	Heart Tree Chest Chin
8.	/u/ and /ɛ/	/lussu?/ /lessɛ/	Released To step on

Based on Table 4, the study indicates that these phoneme pairs are different phonemes since they are in minimum pairs and similar pairs. Hence, it verifies that vowel phonemes in the Pattae language are six, namely /i/, /u/, /a/, /e/, / /,

and /o/.

As verified above, vowel phonemes are as many as six, namely /i/, /u/, /a/, /e/, / /, and /o/. These phonemes have their articulatory characteristics. They are presented in the following table 5 of the distribution of vowel phonemes.

TABLE 5
DISTRIBUTION OF VOWEL PHONEME

Phoneme	Initial Position	Middle Position	Final Position
/i/ and /e/	/iko?/ and /ekko?/	/sia/ and /s&ok/	/kali/ and /kalle/
/a/ and /o/	/ato?/ and /oto/	/babo?/ and /boto/	/apa/ and /appo/
/o/ and /u/	-	/boto/ and /buttu/	/tallo/ and /tallu/
/e/ and /o/	-	-	/ate/ and /ato/
/a/ and /u/	/ala/ and /ulu/	/batu/ and /bu?tu/	/ula/ and /ulu/
/o/ and /e/	-	/mass&mpa/	and /aro/ and /ar&/
/o/ and /o:/	-	/ma?soppo/	-
/i/ and /i:/	-	/timo?/ and /timo:/	-
/e/ and /e/	-	/timo/ and /ti:mo/	-
		/n&ia?/ and /nene?/	-

C. Classification of Consonant Phoneme

Consonants are speech sounds in which the airstream gets obstructions when it comes out of the lung. In the Pattae language, consonant sounds follow the consonant pronunciation in general, involving three factors. First, it includes vocal cord conditions, touches between speech organs, and ways of speech organs touching one another. Second, speech organs that move to produce speech sounds refer to active articulators, such as the lower lip, lower teeth, and tongue. Third, areas touched or approached are called articulator areas, for instance, upper lip, upper teeth, upper gum, hard palate, soft palate, and epiglottis. These factors are shown in the following Table 6.

TABLE 6
CONSONANT OF PATTAE LANGUAGE

Way of Articulation	Articulation Area	Bilabial	Dental / Alveolar	Palatal	Velar	Glottal
Plosive / Stop (obstruction)	Voiceless	P	T		k	ʔ
	Voiced	B	D			
Affricative (Composite)	Voiceless			c		
	Voiced			j		
Fricative (Spirant)	Voiceless		S			
	Voiced					
Nasal (Scrannel)	Voiced	M	N	ɲ	ŋ	
Trill (Vibration)	Voiced		R			
Lateral (Side)	Voiced		L			
Semivowel	Voiced	w		y		

Based on the vocal cord condition

1. voiced consonant, the vocal cord slightly opens, so vibrations in the vocal cord occur, such as [b], [d], [g], and [c].
2. Voiceless consonant: the vocal cord quite widely opens, so there are no vibrations in the vocal cord, such as [k], [p], [t], and [s].

Based on articulation area/place

1. bilabial, the upper lip moves closer to the lower lip.
 - a. Oral sound: sounds are released through the oral cavity, such as [p] and [b].
 - b. Nasal sound: sounds are released through the nasal cavity, such as [m].
2. Labiodental: the lower teeth move closer to the upper teeth, such as [f] and [v].
3. Laminoalveolar: the blade of the tongue moves closer to the gum, such as [t] and [d].
4. Dorso-velar: the back of the tongue and soft palate, such as [k] and [g].

Based on ways of articulation

1. obstruction (occlusive, plosive, stop); the articulators entirely block the airstream, so the air is compressed behind the obstruction place. Then, the obstruction is suddenly opened, so the occlusion occurs. They are [b], [d], [g], [p], [t], and [k].
2. Spirant (fricative): the active articulators move closer to the passive ones to form a narrow gap so that the air gets frictions in the gap, such as [f], [s], and [z].
3. composite (affricative); the composite of obstructions and spirant, such as [c] and [j].
4. Scrannel (nasal): the articulators block the airstream through the mouth and let it come out of the nasal cavity, such as [m], [n], and [ɲ].
5. Vibration (trill): the active articulators make contact successfully with the passive ones, so the sound vibrations are repeated, such as [r].

6. Side (lateral): the active articulators block the airstream on the central part of the mouth, then let the air come out along the sides of the tongue, such as [l].
7. Glide (semivowel, approximant): the active and passive articulators form a space close to the open position as forming a vowel, but it is not narrow enough to produce fricative consonants, such as [w] and [y].

TABLE 7
DISTRIBUTION OF CONSONANT SOUND

Sound	Initial	Middle	Final
[p]	[paccin] 'clean' [parri?] 'difficult' [pecok] 'mortar pestle'	[a?pa?] 'four' [pipi?] 'clip' [mapia] 'good'	-
[b]	[tedon] 'buffalo' [tae?] 'no' [take] 'stem'	[kamban] 'swollen' [kabo] 'forest' [amban] 'small leech'	-
[t]	[tedon] 'buffalo' [tae?] 'no' [take] 'stem'	[batte] 'roaster' [bittoeŋ] 'star' [pakita] 'to see'	-
[d]	[dakko] 'stork' [doan] 'rod' [doti] 'black magic'	[bandan] 'name of cake' [kε? dεk] 'to stand' [mandε] 'to eat'	-
[k]	[kuli?] 'skin' [kallε] 'gum' [kella] 'to cry'	[sikku] 'elbow' [kamiki] 'papaya' [likkua] 'galangal'	[pi?ak] 'to split' [kajok] 'to scratch' [tasik] 'sea'
[g]	[galuŋ] 'rice field' [gatta] 'rubber' [guttu] 'knee'	[caŋgoreŋ] 'nut' [masigiq] 'mosque' [boŋga] 'hole'	-
[ʔ]		[ri?nik] 'drizzle' [ci?cik] 'little' [bi?ti?] 'calf'	[lasse?] 'langsar' [pasa?] 'market' [appa?] 'four'
[s]	[sa?de] 'pinggang' [salaŋga] 'pundak' [sali?an] 'waist'	[pasanan] 'in-laws' [usuk] 'lateral' [lussu?] 'released'	
[l]	[laolako] 'to' [labu] 'set' [lussu?] 'released'	[kallai] 'to hit' [balε] 'fish' [kali] 'to dig'	-
[r]	[rakka] 'finger' [rupa] 'face' [rukka] 'noisy'	[care: pa] 'dirty' [ma? reba] 'to throw' [miru?] 'to drink'	-
[m]	[mariri] 'yellow' [[mabusa] 'white' [magau?] 'blue'	[tama] 'to enter' [timo?] 'heap' [rambu] 'smoke'	
[n]	[nasang] 'all' [nande] 'rice' [nasu] 'to cook'	[bandaŋ] 'name of cake' [ŋena?] 'just now' [deŋanni] 'ever'	[baisan] 'in-law' [uran] 'rain' [laen] 'other'
[ŋ]	[ŋena?] 'just now'	[taliŋa] 'ear' [aŋin] 'wind' [boŋi] 'night'	[soroŋ] 'to push' [bilaŋ] 'to calculate' [kolloŋ] 'neck'
[ŋ̄]	[ŋ̄araŋ] 'horse' [ŋ̄awa] 'life' [ŋ̄amaŋ] 'delicious'	[maŋ̄aŋ] 'sap' [baŋ̄ak] 'swan' [boŋ̄no?] 'to cook once'	
[c]	[corok] ' [cindi] [caninok]	[macca] 'clever' [biccekaŋ] 'stye' [macinna] 'to want'	
[j]	[jai?] 'to sew' [jillo?] 'to point' [jaŋgo] 'beard'	[pijillok] 'index finger' [baja] 'lung' [lajuk] 'high without fruit'	
[w]	[waja] 'coal' [wa?i] 'water' [wakkelε] 'representative'	[mawa?i] 'watery' [mawari] 'stale' [lawa?i] 'withstand'	
[y]		[iyaŋasan] 'all' [iyakε] 'if, will' [iyaku?] 'I'	

Based on Table 7, consonant sounds in the Pattae language are eighteen. However, some of them need help to be in each position. Four consonant sounds, [n], [ŋ̄], [k], and [ʔ], are only available in the final position, and one, [y], is only able to be in the middle position. Moreover, these eighteen consonant sounds are not eighteen phonemes. There is a need to verify the eighteen consonant sounds as eighteen consonant phonemes.

D. Verification of Consonant Phoneme

Based on the data, the study found eighteen consonant phonemes in the Pattae language, in terms of /p/, /b/, /t/, /d/, /k/, /g/, /ʔ/, /c/, /j/, /n/, /m/, /l/, /ɳ/, /l/, /r/, /s/, /w/, and /y/. Their status is verified as phonemes or allophones using the phoneme discover the principle, namely finding their minimum pairs or similar pairs as follows.

TABLE 8
VERIFICATION OF MINIMUM PAIRS

No.	Phoneme	Word Example	Meaning
1.	/p/ and /b/	/posi/ /bosi/	Navel rotten
2.	/t/ and /d/	/tasi/ /dasi/	Sea bird
3.	/k/ and /g/	/kutu/ /guttu/	Flea knee
4.	/c/ and /j/	/baca/ /Baja/	to read tomorrow
5.	/m/ and /n/	/meme/ /nene//	pee grandmother
6.	/ñ/ and /ŋ/	/ñe ñak/ /ŋena/	mushy just now
7.	/n/ and /ŋ/	//nene?/ /ŋena?/	grandfather just now
8.	/k/ and /ʔ/	/besak/ /pasa?/	sequence market
9.	/s/ and /t/	/lessɛ/ /lette/	to step on leg
10.	/w/ and /b/	/wissɛi/ /bissai/	to know to wash
11.	/l/ and /r/	/lussu?/ /rusu?/	released lateral

The consonant pairs above are considered minimum pairs or similar pairs. It is indicated that these pairs are different phonemes. Hence, the consonant phonemes of the Pattae language are /p/, /b/, /t/, /d/, /k/, /g/, /ʔ/, /c/, /j/, /n/, /m/, /l/, /ɳ/, /l/, /r/, /s/, /w/, and /y/.

The distribution of each consonant phoneme in a language is different. A phoneme can be in a word's initial, middle, and final position. There is a phoneme that is entirely distributed, referring to occupying the initial, middle, and final positions, but there is also a partially distributed phoneme. The partially distributed phonemes can only be in one or two positions.

The differences in phoneme distribution are one of every language's characteristic. Concerning these differences, the distribution of consonant phonemes in the Pattae language is shown in Table 9.

TABLE 9
DISTRIBUTION OF CONSONANT PHONEME

Phoneme	Initial Position	Middle Position	Final Position
/p/ and /b/	/posi/ and /bosi/	/lepa?/ and /reba?/	-
/t/ and /d/	/tasi/ and /dassi/	/buta/ and /buda/	-
/k/ and /g/	/kutu/ and /guttu/	/jakka/ and /janḡo/	-
/k/ and /ʔ/	-	/maŋaka/ and /maʔraka/	/besak/ and /besa?/
/c/ and /j/	/cappi/ and /jari/	/baca/ and /baja/	-
/m/ and /n/	/meme/ and /nene/	/timbu/ and /tindo/	-
/n/ and /ŋ/	/nene?/ and /ŋena?/	/tumuane/ and /tumaŋɛ/	/rekeŋ / and /tekkɛn/
/ñ/ and /ŋ/	/ñe ñak/ and /ŋena?/	/ba ñak/ and /baŋga/	-
/l/ and /r/	/lussu/ and /rusu?/	/lalan/ and /rara/	-
/s/ and /t/	/sae/ and /taɛ/	/lessɛ/ and /lette/	-
/w/ and /b/	/wissɛi/ and /bissai/	/awu/ and /abu/	-
/y/ and /j/	-	/baya/ and /baja/	-

Table 9 shows consonant phonemes in the Pattae language are partially distributed since they are only in one or two positions. There are three phonemes distributed in all positions, namely /n/, /ŋ/, and /k/, four phonemes distributed in the final, namely /n/, /ŋ/, /k/, and /ʔ/, twelve phonemes distributed in the initial and middle, namely /p/, /b/, /t/, /d/, /m/, /ñ/, /k/, /g/, /l/, /r/, /s/, and /w/, and two phonemes distributed in the middle, namely /y/ and /j/.

V. CONCLUSION

Based on the explanation above, conserving the Pattae language as the initial step of this study successfully found sound characteristics and segmental phonemes in the Pattae language. The study summarized the findings as follows.

1. Two speech sounds are found in the Pattae language: vowels and consonants. Vowels consist of ten sounds, namely i], [i:], [u], [u:], [e], [ɛ], [a], [a:], [o], and [o:]. Consonants consist of eighteen sounds, namely [p], [b], [t],

- [d], [k], [g], [c], [j], [s], [m], [n], [ŋ], [ɲ], [ɳ], [l], [r], [w], and [y]. Moreover, diphthongs are included in vowels as many as two, namely [a^w] and [a^y].
2. The classification of vowel sound characters through analyzing minimum pairs is indicated as six vowel phonemes, namely /a/, /i/, /u/, /e/, and /ɛ/, and four long vowel phonemes, namely /a:/, /i:/, /u:/, and /o:/. However, the long vowels do not meet the requirements to be considered as vowels, resulted from insufficient supporting data. These vowel phonemes can be distributed in the initial, middle, and final positions, except /e/, with no initial position data.
 3. The classification of consonant sound characters through analyzing minimum pairs is found eighteen, namely /p/, /b/, /t/, /d/, /m/, /ñ/, /n/, /ŋ/, /k/, /g/, /l/, /r/, /s/, /j/, /c/, /ʔ/, /y/, and /w/. Three phonemes are distributed in all positions, namely /n/, /ŋ/, and /k/, four phonemes are distributed in the final, namely n/, /ŋ/, /k/, and /ʔ/, twelve phonemes are distributed in the initial and middle, namely p/, /b/, /t/, /d/, /m/, /ñ/, /k/, /g/, /l/, /r/, /s/, and /w/, and two phonemes are distributed in the middle, namely /y/ and /j/.

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Jerniati I. was born in Majene, West Sulawesi in 1966. She finished her Undergraduate from Hasanuddin University in 1989 and continued her Graduate to Hasanuddin University. She finished in 1998. She began her career as a researcher at Language Development and Fostering Agency in Southeast Sulawesi. She is a principal researcher at the National Research and Innovation Agency. Her research interests are endangered language, language documentation, language and literature preservation, jern001@brin.go.id.



Herianah was born in Takkalasi, South Sulawesi in 1971. She finished her Undergraduate from Hasanuddin University in 1994 and continued her Graduate to Makassar State University. She finished in 2007. She began her career as a researcher at Language Development and Fostering Agency in Southeast Sulawesi. She is a senior researcher at the National Research and Innovation Agency. Her research interests are language, literature, and education, heri031@brin.go.id.



Ratnawati was born in Soppeng Regency, South Sulawesi. She is a senior researcher at Research Center for Language, Literature, and Community, National Research and Innovation Agency, Indonesia. She finished her study majoring on English Literature at Hasanuddin University in 1998 and accomplished her graduate program on Language Education at Makassar State University in 2003. She was a researcher at Language Development and Fostering Agency between 2001 and 2021. Her research interests are language, literature, language education, and forensic linguistics, ratn015@brin.go.id.



Andi Indah Yulianti was born in Martapura, South Kalimantan, Indonesia in 1982. She finished her undergraduate program at Hasanuddin University and continued to Brawijaya University, Malang. She is a junior researcher at Research Center for Language and Literature Preservation, National Research and Innovation Agency, Indonesia. Her research interests are endangered language, language documentation, language and literature preservation, andi047@brin.go.id.



Musayyedah was born in Sinjai, South Sulawesi. She finished her Undergraduate from Indonesian Moslem University in 1997 and continued her Graduate to Hasanuddin University. She finished in 2010. She began her career as a researcher at Language Development and Fostering Agency in Southeast Sulawesi. She is a senior researcher at the National Research and Innovation Agency. Her research interests are endangered language, language documentation, language and literature preservation, musa003@brin.go.id.



Syamsurijal is an associate researcher at Research Center for Language and Literature Preservation, National Research and Innovation Agency, Indonesia. He finished her undergraduate and graduate programs at Hasanuddin University, Makassar, Indonesia. His research interests are endangered language, language documentation, language and literature preservation, syam016@brin.go.id