

A Comparison between Sentani and English Speech Sounds

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Abstract—The present study compares the speech sound variations between Sentani and English, involving their vowels and consonants respectively. A qualitative descriptive method was used to systematically describe the comparison of speech sounds from references and literature works, along with data analyzed by the phonetic articulatory method. The comparison reveals that vowels and consonants between English and Sentani, where in terms of number, English has a greater number of vowels and consonants. Sentani only has 7 vowel sounds, whereas English has 12 vowel sounds. The entire vowels in Sentani exist in English. Sentani has 18 consonant sounds while English has 24 consonant sounds. The differences in consonants lie in Voiceless Bilabial Plosive [p], Voiceless Alveolar Plosive [t], Voiceless Palatal Affricate [c], Voiced Labiodental Fricative [v], Voiceless Dental Fricative [θ], Voiced Dental Fricative [ð], Voiced Alveolar Fricative [z], Voiceless Palatal Fricative [ʃ], Voiced Palatal Fricative [ʒ] and Voiced Alveolar Flap/Retroflex [ɾ] found in English consonant variations but they do not exist in Sentani. Voiced Bilabial Fricative [β], Voiced Velar Fricative [ɣ], and Voiced Alveolar Trill [r] exist in the Sentani consonant variations but they do not exist in English.

Keywords— *Sentani, English, speech sounds*

Abstrak—Penelitian ini membandingkan variasi bunyi tuturan antara bahasa Sentani dan bahasa Inggris, yang masing-masing melibatkan bunyi vokal dan konsonan. Metode deskriptif kualitatif digunakan untuk mendeskripsikan secara sistematis perbandingan bunyi ujaran bersumber dari referensi dan literatur yang telah ada, beserta data yang dianalisis dengan metode artikulasi fonetik. Dari perbandingan tersebut diketahui bahwa bunyi vokal dan konsonan antara bahasa Inggris dan bahasa Sentani, dimana dari segi jumlah, bahasa Inggris memiliki jumlah vokal dan konsonan yang lebih banyak. Sentani hanya memiliki 7 bunyi vokal, sedangkan bahasa Inggris memiliki 12 bunyi vokal. Seluruh bunyi vokal pada bahasa Sentani ada dalam bahasa Inggris. Bahasa Sentani memiliki 18 bunyi konsonan sedangkan bahasa Inggris memiliki 24 bunyi konsonan. Perbedaan bunyi konsonan terletak pada Voiceless Bilabial Plosive [p], Voiceless Alveolar Plosive [t], Voiceless Palatal Affricate [c], Voiced Labiodental Fricative [v], Voiceless Dental Fricative [θ], Voiced Dental Fricative [ð], Voiced Alveolar Fricative [z], Voiceless Palatal Fricative [ʃ], Voiced Palatal Fricative [ʒ] dan Voiced Alveolar Flap/Retroflex [ɾ] ditemukan pada variasi konsonan bahasa Inggris namun tidak ada pada bahasa Sentani. Voiced Bilabial Fricative [β], Voiced Velar Fricative [ɣ], dan Voiced Alveolar Trill [r] ada pada variasi konsonan bahasa Sentani namun tidak ada pada Bahasa Inggris.

Kata Kunci— *bahasa Sentani, bahasa Inggris, bunyi tuturan*

1. Introduction

The language system in both Sentani and English languages is completely different. English is a descendant from a sub-family, which is Germanic of Indo-European language, whereas Sentani is a descendant from a sub-family, which is Sentani Proper of East Bird's Head-Sentani. Even though Sentani and English significantly differ in their lexicon, morphology, syntax, and semantics, this study will only focus on their speech sound variations. According to Crystal (2018), phonetics is the study of language that focuses on the sound characteristics of how humans convey and receive sounds. In simple terms, it can be defined that phonetics refers to the characteristics of speech sounds.

Concerning characteristics of speech sounds, all of them are produced in the vocal tract which includes the vocal cords, larynx, pharynx, oral cavity, and nasal cavity. There are two fundamental differences regarding the general characters of sounds in speech, specifically vowels and consonants. When scientifically studying the sounds in a language about vowels and consonants, it becomes very difficult indeed to explain without self-practicing. The general definition of a vowel is that there is no friction or obstruction to the flow of air resulting from the larynx to the lips, whereas consonants are that there is friction that occurs from the larynx to the lips to produce a sound (Roach, 2009). There are thousands of languages in the world and each language specifically has its own unique characters of speech sound.

Comparing the vowel and consonant sounds of two different languages is crucial for understanding how people communicate globally. It is essential for gaining insights into the diverse ways in which human cultures communicate. Sound comparisons provide a nuanced understanding of phonetic structures, intonations, and obviously unique phonological features inherent to each language. Moreover, it helps language learners improve their pronunciation, identify unique linguistic features, and appreciate diverse ways of expression. By exploring these

differences, people foster cross-cultural understanding and strengthen connections between communities, promoting a more inclusive and interconnected world.

Several indigenous language studies have been conducted regarding their grammar and sound variations, involving Sambori language (Arafiq, 2019), Mandailing language (Nasution & Mayasari, 2023), and (Darajat et al., 2021) Using language. Thus, the study considers some previous works of literature as a basis to address a gap regarding the comparison of speech sounds between Sentani and English languages. Mulyaningsih (2014) in the study of sound comparison between Mandarin and Indonesian languages states that similarities in sound characteristics between Indonesian and Mandarin where vowels and consonants have similar sounds such as the vowels [i], [u], [a], [e], [o], and the consonants [b], [p], [m], [f], [n], [l]. Meanwhile, there are differences in speech sounds where Indonesian does not have [ɣ] vowels and [ɽ] consonant retroflexes which do not affect the meaning.

Moreover, (Alshalaan, 2020) in the study regarding sound comparison between English and Arabic languages showed that several English consonants do not exist in Arabic and vice versa. Arabic speakers feel that it is rather difficult to pronounce [v] and use [f] instead. They also substitute both [t] and [d] consonants for [ʔ] and [e] respectively. The [r] sound is always pronounced in Arabic but sometimes dropped in British accent of English. Additionally, [ʔ] exists in Arabic as a consonant but only as an alternative variation of pronunciation in English.

Previous studies provide a systematic description of the comparative analysis of varieties of speech sounds in two different languages focusing on vowels and consonants. In line with previous studies regarding comparative analysis of sound varieties, this study lies in two different languages which offer the comparison involving both Sentani as a local language in Papua region of Indonesia and English as an international language

in the world. Therefore, this study aims to compare two different languages regarding their varieties of vowel and consonant sounds in detail description. Furthermore, this study is to help preserve local languages and introduce international languages to certain communities, as well as become language learning materials at schools.

2. Research Method

The study used a qualitative descriptive method that systematically describes the comparison of speech sounds. Data were focused on vowels and consonants both Sentani and English. Data were collected by library research from references and literature works of Sentani and English languages, observing essential parts of words that can be analyzed into their vowels and consonants and then comparing both varieties. Furthermore, Data were analyzed by phonetic articulatory method. Vowels were determined based on vertical position, horizontal position, lip rounding, and stress. Meanwhile, consonants were determined by the air stream mechanism, place of articulation, manner of articulation, and the state of the glottis/voicing.

3. Result and Discussion

3.1 Result

Based on the table below, it can be seen that the number of vowels in Sentani language is different from the number of vowels in English language. Sentani language only has 7 vowel sounds, while English has more speech sound variations, consisting of 12 vowels. The entire variations of vowel sounds in Sentani also exist in English. Meanwhile, the number of consonants in Sentani is significantly different from the number of consonants in English. Sentani has 18 consonant sounds while English has 24 consonant sounds. There are a few consonants that are present in Sentani but absent in English, and vice versa. More comparative descriptions can be seen in the following tables:

	Description	Sentani	English
[i]	High Front Unrounded (Tense)	/ifau/	/si/
[ɪ]	High Front Unrounded (Lax)	-	/fin/
[e]	Middle Front Unrounded (Tense)	/aye/	/get/
[ɛ]	Middle Front Unrounded (Lax)	-	/dɛd/
[æ]	Low Front Unrounded	/wəjæ/	/kæt/
[a]	Low Central Unrounded	/faya/	/swan/
[ə]	Middle Central Unrounded	/uβənə/	/ægəʊ/
[ʌ]	Low Back unrounded	-	/cʌp/
[o]	Middle Back Rounded (Tense)	/oro/	/fol/
[ɔ]	Middle Back Rounded (Lax)	-	/dɔŋ/
[u]	High Back Rounded (Tense)	/uno/	/glu/
[ʊ]	High Back Rounded (Lax)	-	/bʊk/

Table 1. Vowel Comparison

	Description	Sentani	English
[p]	Voiceless Bilabial Plosive	-	/pen/
[b]	Voiced Bilabial Plosive	/mbai/	/bæd/
[t]	Voiceless Alveolar Plosive	-	/tel/
[d]	Voiced Alveolar Plosive	/findəlau/	/dip/
[k]	Voiceless Velar Plosive	/kə/	/kʊk/
[g]	Voiced Velar Plosive	/məugə/	/ges/
[ç]	Voiceless Palatal Affricate	-	/cem/

[ɟ]	Voiced Palatal Affricate	/ɟoŋgu/	/ɟæm/
[β]	Voiced Bilabial Fricative	/βu/	-
[f]	Voiceless Labiodental Fricative	/ifau/	/fud/
[v]	Voiced Labiodental Fricative	-	/vast/
[θ]	Voiceless Dental Fricative	-	/θɪn/
[ð]	Voiced Dental Fricative	-	/ðə/
[s]	Voiceless Alveolar Fricative	/anəsi/	/sɪŋ/
[z]	Voiced Alveolar Fricative	-	/zu/
[ʃ]	Voiceless Palatal Fricative	-	/ʃɪp/
[ʒ]	Voiced Palatal Fricative	-	/æʒət/
[ɣ]	Voiced Velar Fricative	/moɣo/	-
[h]	Voiceless Glottal Fricative	/huŋ/	/hæt/
[m]	Voiced Bilabial Nasal	/mijæ/	/mæn/
[n]	Voiced Alveolar Nasal	/na/	/nekst/
[ɲ]	Voiced Palatal Nasal	/iɲə/	-
[ŋ]	Voiced Velar Nasal	/βaŋ/	/loŋ/
[r]	Voiced Alveolar Trill	/rəmə/	-
[ɾ]	Voiced Alveolar Flap/Retroflex	-	/ɾʌn/
[l]	Voiced Alveolar Lateral	/məli/	/left/
[w]	Voiced Bilabial Approximant	/wi/	/wen/
[j]	Voiced Palatal Approximant	/ja/	/jes/

Table 2. Consonant Comparison

3.2. Discussion

3.2.1. Speech Sounds of Sentani

Sentani (ISO 639-3 [set]) or Buyaka is an indigenous language in Indonesia. Sentani language is one of Papuan languages located in the eastern part of Indonesia. According to data in 1996, around 30,000 Sentani speakers are generally bilingual and multilingual and only a few are monolingual. The Sentani language is geographically located in Papua province in Sentani Lake area and is spread over around 30 villages. The condition of the Sentani language is on a scale of 5 (developing) where this language is used actively with literature in standard form and spoken by several people even though it has not yet spread widely on an ongoing basis. The Sentani language consists of 3 dialects, namely East Sentani, Central Sentani, and West Sentani (Eberhard et al., 2023).

Sentani language belongs to the Sentani family, which is a branch of the East Bird's Head-Sentani family. The linguistic group is primarily spoken by the Sentani people residing around the Sentani Lake of Papua province, Indonesia. The family is characterized by its unique phonological and morphological features, setting it apart within the broader context of Papuan languages. Sentani language comes from the East Bird's Head-Sentani where it is closely related to Tabla language, Nafri language, and Demta language (Gregerson & Hartzler, 1987).

Based on the result, Sentani language has 7 vowel sound variations, and 18 consonant sound variations which have been identified. Nevertheless, these sound variations have not been able to be categorized as phonemes of the words due to the need for further research. The findings of Sentani sound variations from previous studies (Cowan, 1965; Hartzler, 1976) are quite different and indicate a few dissimilar sounds. Concerning the current study, vowel sounds are determined based on vertical position, horizontal position, lip rounding, and stress. Besides, consonant sounds are determined by the air stream mechanism, place

of articulation, manner of articulation, and the state of the glottis.

Sentani has its own unique set of sounds, contributing to its phonetic identity. 7 Vowels and 18 consonant variations of Sentani are represented in the words that indigenous people are speaking on everyday occasions. They represent the unique characteristics of Sentani language and reflect the distinct cultural identity of Papua in certain regions, especially near Sentani Lake. Unfortunately, according to Yektiningtyas & Gultom (2018), only indigenous people living in the isolated islands of Lake Sentani can speak the language vigorously, whereas the children use the language passively. Therefore, documentation and revitalization, particularly for children, are considered essential to prevent the language from total extinction.

3.2.2. Speech Sounds of English

English (ISO 639-3 [eng]), based on data from Ethnologue: Language of the World by SIL International is spoken by around 1,456,448,320 people from all countries and is on a scale of 1 (international) where this language is used between countries in trade, knowledge exchange and international policy. English has many varied dialects including Cockney, Geordie, West Country, Scottish, Birmingham dialects, and others. English in the academic world is also taught as a second and foreign language (Eberhard et al., 2023). English serves as a global lingua franca, acting as a common language of communication among people from diverse linguistic backgrounds. Today, English is the primary language of international business, diplomacy, science, technology, and popular culture (Seidlhofer, 2005).

The main source of what has developed into English comes from the Germanic language spoken by a group of tribes from northern Europe who moved to the British Isles, namely the Anglos, Saxons, and Jutes. The term Anglo-Saxon describes the first-speaking tribe to use English (Old English). In general, English underwent a significant transformation starting from Old

English, Middle English, and up to the Modern English spoken nowadays. The ancestral language of English is Indo-European where English is closely related to German, Danish, and Norwegian languages (Yule, 2022).

Generally, English language has 12 vowel sound variations and 24 consonant sound variations (Yule, 2022). Understanding these unique characteristics is crucial for learners of English as a second language and for linguists studying the phonetics and phonology of the language. It's important to note that there are variations in pronunciation among different dialects of English, leading to differences in vowel and consonant variations. Vowel sounds are determined based on vertical position, horizontal position, lip rounding, and stress. In addition, consonant sounds are determined by the air stream mechanism, place of articulation, manner of articulation, and the state of the glottis. 12 Vowels and 24 consonants of English are commonly represented in the words when speakers are speaking. English vowels and consonants exhibit several unique characteristics that contribute to the distinctive sound system of the language. Those distinctive sounds are internationally used around the world.

3.2.3. Comparison between Sentani and English

Vowels and consonants in Sentani and English have significant distinctions in several variations of phonetic systems. Sentani language only has 7 vowel sounds, whereas English has more than 7 speech sounds. English has 12 speech sounds and the whole vowel sound variations in the Sentani language are also included in English vowels. English has more vowels owing to the gemination aspect in certain vowels. Kaye (2005), states that gemination is a phonetic phenomenon whereby two identical sounds co-occur in one word or at word boundaries. The co-occurrence of two identical sounds does not matter, what matters is their pronunciation.

Sentani has 18 consonant sounds while English has 24 consonant sounds. The difference in consonants between Sentani and English lies in the

Voiceless Bilabial Plosive [p], Voiceless Alveolar Plosive [t], Voiceless Palatal Affricate [c], Voiced Labiodental Fricative [v], Voiceless Dental Fricative [θ], Voiced Dental Fricative [ð], Voiced Alveolar Fricative [z], Voiceless Palatal Fricative [ç], Voiced Palatal Fricative [ʒ] and Voiced Alveolar Flap/Retroflex [ɾ] which are found in English sound variations but they do not exist in Sentani speech sounds. Meanwhile, Voiced Bilabial Fricative [β], Voiced Velar Fricative [ɣ], and Voiced Alveolar Trill [r] exist in the Sentani language sound variations but they do not exist in English speech sounds. English has more consonants than Sentani in some aspects. Vowel and consonant sounds in Sentani are relatively simple. In line with Foley's statement (1986), in general, the variety of language sounds in the Papua region is simpler than English speech sounds.

If we look at the comparison, there are several types of sounds that are present in English but not in Sentani and vice versa. These languages have different sound variations due to a combination of historical, cultural, and environmental factors that influence the language. Language develops over time, and sound changes occur as a natural part of this process. Changes in pronunciation, called sound shifts, can lead to the creation of new sounds or the loss of existing sounds. Over the centuries, these historical developments contributed to the diversity of sounds in language. Then, cultural and social factors can play a role in shaping the sound of a language. Cultural and social factors such as education, class, and regional identity can also contribute to sound variations in language. Regarding the environment, languages spoken in different regions may develop different phonetic features due to geographic isolation. Over time, the separation of populations can lead to differences in language sounds. This phenomenon is often seen in the development of certain dialects and languages.

Apart from that, the similarities in the sounds of English and Sentani occur for several reasons. The sound similarities that exist in the two

languages are closely related to the monogenetic theory in comparative linguistics where each language comes from the same source and ancestor (Fromkin et al., 2018). This is the basis that several closely related languages have the same sound variations. If you look further back, English with Indo-European ancestors and Sentani with Trans-New Guinean ancestors will meet at a point of the same common ancestry related to this theory. In addition, human vocal anatomy limits the range of sounds that can be produced. Although there are many variations, the basic structures such as the vocal cords and mouth shape are similar and not very different. Then, languages often influence each other through cultural contact. When languages come into contact, they may borrow sounds from each other. This is common in cases of language contact, for example through trade, migration, or colonization.

4. Conclusion

It can be concluded that comparison of vowels and consonants between English and Sentani, where in terms of number, English has a greater number of vowels and consonants. Sentani only has 7 vowel sounds, whereas English has 12 vowel sounds. The whole vowels in Sentani occur in English. Sentani has 18 consonant sounds while English has 24 consonant sounds. The difference in consonants between Sentani and English lies in Voiceless Bilabial Plosive [p], Voiceless Alveolar Plosive [t], Voiceless Palatal Affricate [c], Voiced Labiodental Fricative [v], Voiceless Dental Fricative [θ], Voiced Dental Fricative [ð], Voiced Alveolar Fricative [z], Voiceless Palatal Fricative [ç], Voiced Palatal Fricative [ʒ] and Voiced Alveolar Flap/Retroflex [ɾ] which present in English consonant variations but they do not present in Sentani. Voiced Bilabial Fricative [β], Voiced Velar Fricative [ɣ], and Voiced Alveolar Trill [r] exist in the Sentani consonant variations but they do not exist in English. These languages have different sound variations due to a combination of historical, cultural, and environmental factors of linguistics that influence

the language. However, sound similarities can be accounted for due to the same ancestor and vocal anatomy limit.

5. References

- Alshalaan, K. (2020). A comparison between English and Arabic sound systems regarding places of articulation. *OALib*, 07(05), 1–7. <https://doi.org/10.4236/oalib.1105679>
- Arafiq, A. (2019). Bahasa Sambori: Sebuah Kajian Morfosintaksis. *Linguistika: Buletin Ilmiah Program Magister Linguistik Universitas Udayana*, 26(1), 84. <https://doi.org/10.24843/ling.2019.v26.i01.p10>
- Cowan, H. (1965). *Grammar of the Sentani language*. Brill.
- Crystal, D. (2018). *The Cambridge encyclopedia of the English language*. Cambridge university press.
- Darojatin, E., Sariono, A., & Salikin, H. (2021). Bahasa Using di Desa Serut Kecamatan Panti Kabupaten Jember. *Linguistika: Buletin Ilmiah Program Magister Linguistik Universitas Udayana*, 28(1), 55. <https://doi.org/10.24843/ling.2021.v28.i01.p05>
- Eberhard, David M, Gary F. Simons, & Charles D. Fennig (eds.). (2023). *Ethnologue: Languages of the world. Twenty-sixth edition*. SIL International.
- Foley, W. A. (1986). *The Papuan languages of New Guinea*. Cambridge University Press.
- Fromkin, V., Rodman, R., & Hyams, N. (2018). *An introduction to language*. Cengage Learning.
- Gregerson, K., & Hartzler, M. (1987). Towards a reconstruction of Proto-Tabla-Sentani phonology. *Oceanic Linguistics*, 26(1/2), 1. <https://doi.org/10.2307/3623164>
- Hartzler, M. (1976). Central Sentani phonology. *Irian: Bulletin of Irian Jaya Development*, 5(1), 66–81.
- Kaye, A. S. (2005). Gemination in English. *English Today*, 21(2), 43–55. <https://doi.org/10.1017/S0266078405002063>
- Mulyaningsih, D. H. (2014). Perbandingan fonologi Bahasa Indonesia dan Bahasa Mandarin. *BAHTERA : Jurnal Pendidikan Bahasa Dan Sastra*, 13(1), 1–10. <https://doi.org/10.21009/BAHTERA.131.1>
- Nasution, U. N., & Mayasari, M. (2023). Translation Methods of Mangupa Text from Mandailing Language into Indonesian. *Linguistika: Buletin Ilmiah Program Magister Linguistik Universitas Udayana*, 30(2), 79. <https://doi.org/10.24843/ling.2023.v30.i02.p01>
- Roach, P. (2009). *English phonetics and phonology: A practical course*. Cambridge university press.
- Seidlhofer, B. (2005). English as a lingua franca. *ELT Journal*, 59(4), 339–341. <https://doi.org/10.1093/elt/cci064>
- Yektiningtyas, W., & Gultom, M. (2018). Exploring Sentani folktales of Papua as media to teach local language for children. *Sino-US English Teaching*, 15(5). <https://doi.org/10.17265/1539-8072/2018.05.001>
- Yule, G. (2022). *The study of language*. Cambridge university press.