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A Case Study of English Affricate Consonants Realized by a Two-year-old Indonesian Child

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*Abstract**
In English, the two affricate consonants are not owned by other languages. They are [dʒ] a voiced affricate like in the word jaguar, garage, and jeep, and [tʃ] a voiceless affricate like in the word chin, cheap, and check. These sounds are phonetic sequences consisting of a stop with a fricated release. For some EFL learners, especially children, producing those sounds are difficult because they don't have a similar or same sound in their first or mother language like in Indonesian language. This study is aimed to explore the realization of English two affricate consonants produced by a two-year-old Indonesian child who speaks both English and Indonesian language. This qualitative case study shows a significant result on the voiced and voiceless post-alveolar consonant. The child couldn't produce [dʒ] as in GA production in an initial sound of the word. She produced [j] sound instead, but she could pronounce it if the sound is in the final sound of the word. In contrast, she could pronounce [tʃ] as in GA production in both the initial and final sound of the word with ease. This study contributes helping English teachers to teach their students, especially children in their golden age, to pronounce English words and to contribute to the field of phonetics and phonology, specifically in teaching English pronunciations to EFL learners.

1. Introduction

Language is unique and rich because it has its characteristics. The characteristic relies on the letter, sentence structure, and the sound. Arabic has *kha'* (خ) sound that produces by the tongue that touches the inner soft palate. Korean has ㅃ [pp] sound that produces by two lips, similar to bilabial [p] sound. Russian has [ь] that is not a letter but in English equivalent, it is a soft sign to the voice before a letter. English has two affricate consonants [dʒ] and [tʃ] that are not possessed by other languages. They are consonants that begin as a stop and release as a fricative. [dʒ] is a voiced affricate like in the word *jaguar, garage,* and *jeep*, and [tʃ] is a voiceless affricate like in the word *chin, cheap,* and *check.*

Those sounds are difficult to produce by Indonesian EFL students since Indonesian language doesn't have those sounds in its consonant, whereas sound production is the most

important skill of spoken English (Simanullang, 2018). Moreover, Reid (2016) states that English pronunciation is very difficult for foreign learners and it is due to the fact that spelling and pronunciation are two different matters. On top of it, speech sounds of English are unlikely to be identical to the speech sounds of the mother tongue of the learners. Children who are learning English from an early age found it is difficult since child language acquisition begins with phonology acquisition (Fitriana & Agustina, 2018). The phonology acquisition is related to the preparation process comprising vowel, consonants, and double vowels (diphthongs).

It is principled to teach over one language to children since they are in their golden age and by now it is common for children to speak more than one language. In contrast, they will face some problems because they are still learning their L1 and at the same time they are acquiring the L2. It affects the English sounds that they produce, which tend to sounds like Indonesian language sounds. This research is conducted to find out the realization of two affricate consonants produced by a two-year-old Indonesian child.

A previous study by Andi-Pallawa (2013) entitled A Comparative Analysis between English and Indonesian Phonological Systems mentioned that these English consonants [ʤ] and [ʧ] put the students got trouble in articulating English words. The [ʤ] and [ʧ] sounds are similar with [ĵ] and [ĉ] sound in Indonesian language, but they have a different place and manner of articulations. Hence they put the twenty students of this study got problems when they spoke English and read an English text.

Similarly, a study entitled A Phonological Analysis on the English Consonants of Sundanese EFL Speakers by Risdianto (2017) showed that some Indonesian EFL students that belong to Sundanese tribe couldn't pronounce the English consonants as GA production, they realized [ʤ] as [z] or [d] and realized the [ʧ] sound as [ĉ].

2. Literature Review

In the following subsection, there will be an elaboration on language acquisition, Perceptual Assimilation Model (PAM), consonant, voiced and voiceless sounds, post-alveolar, affricates, and children acquisition of phonology.

2.1 Language Acquisition

Language acquisition is the product of a subconscious language process (Krashen and Terrell (1983) in Bot, Lowie, and Verspoor (2005), that is seen as a natural process of knowledge development and skill in the language without a level of meta-knowledge about the language (Bot, Lowie, and Verspoor, 2005). Parker (1986) states that language acquisition is the study of how human beings acquire grammar in semantic, syntactic, morphological, ad phonological categories and rules which underlie their ability to speak and understand the language they are exposing.

Vygotsky (1962) in Linse (2005) mentioned that children's language learning is advanced through social interaction and experiences based on the context or situation. Adults should provide the children by modifying interaction to foster both intellectual and language development. Similarly, Piagetian stages of development state that by involving children to interact with the environment, in their sensori-motor stage, children will manipulate objects around them including sound production that they hear (Pinter, 2006).

Children learn a language, not because they are subjected to a similar conditioning process, but because they possess an inborn capacity which permits them to acquire a language as a normal maturational process (Hutauruk, 2015). By the age of 5, however, all normal children acquire a language, but not all children learn to read and write. It means human beings are

genetically programmed to acquire a language, but children don't learn a language in the way they learn to read and write, through conscious effort and instruction; rather they acquire a language in the same way as they acquire the ability to walk, effortlessly and without instruction (Parker, 1986).

When children acquire language, there are psychological processes that link brain functions. The language obtained will be good and have an appropriate understanding at each age level when the function of the brain to function properly and support the environmental conditions. Language as a communication tool is acquired by a human from birth until the age of five years (Noermanzah, 2017).

Skinner's (1957, in Noermanzah (2017) behaviorism theory suggests that language acquisition account first by operant conditioning. It means that a child acquires language through imitating the utterances of adults. Parents provide language models. They also provide reinforcement through the sign of approval, through the implementation of the child or through a desire to recognize, respond to, and produce the child's speech.

2.2 Perceptual Assimilation Model (PAM)

Learners' production is partially based on how they perceive the target sounds (Yavas, 2011). What determines the perception of foreign sounds? This model, developed by Best (1995), aims to explain learner behavior in acquiring L2 sounds by accounting for the perception of the relationship between L1 and L2 sounds. The central premise is that listeners tend to assimilate non-native sounds to the native sounds that they perceive as most similar (Yavas, 2011).

2.3 Consonants

The sounds of all languages divided into two classes: consonants and vowels. Consonants are the class of sounds that are associated with obstructed airflow through the vocal tract during their production (Simanullang, 2018). In the same way, Fromkin (2018) states that consonants are produced with some restriction or closure in the vocal tract that obstructs the airflow from the lungs. It can be combined with a vowel to form a syllable.

2.4 Voiced and Voiceless Sounds

The airstream from the lungs moves up the trachea or windpipe and through the opening between the vocal cords is called glottis (Fromkin, 2018). Sounds are voiceless when the vocal cords are apart so that air flows freely without obstruction through the glottis into the oral cavity. The sounds represented by *p, t, k* and *s* in the English words *pit, tip, kit, sip* and *kiss* are voiceless sound. If the vocal cords are together, the airstream forces its way through and causes them to vibrate it is called as voiced sounds of English (Fromkin, 2018). Those sounds are illustrated by the sounds spelled *b,d,g* and *z* in the words *bad, god, dog, zebra*, and *buzz*. Similarly, Carr (2013) argues that sounds which are produced with vocal fold vibration are said to be voiced sounds, whereas sounds produced without vibration are said to be voiceless.

The distinction between voiced and voiceless sound is important in English. It is the phonetic feature or property that distinguishes between word pairs that have initial voiceless sound and final voiceless sound in the final sound like in *pig/big, fine/vine, tin/din*, and *seal/zeal*. All the aspects of the sounds of these words are identical, means, the position of the lips and the tongue is same in each of the word pairs (Fromkin, 2018).

2.5 Post-Alveolar

Palate-alveolar of post-alveolar is the area between the alveolar ridge and the hard palate. Sounds in which there is a constriction between the blade of the tongue and the post-alveolar region are called post-alveolar sounds. An example is the first sound in ship. It is created by bringing the blade of the tongue into a constriction of close approximation with the post-alveolar region (Carr, 2013). In English, the voiced post-alveolar never begins words (except in borrowed words from French like *genre* and *gendarme*). The voiceless post-alveolar sound begins with the words *shoe, shut, sure,* and, *sugar* and ends the words *rush, push,* and *lush* (Fromkin, 2018).

2.6 Affricates [ʧ] [ʤ]

Affricates are phonetic sequences consisting of a stop with a fricated release. English is generally considered to have two affricates: [tʃ] as in *chip, kitchen, church,* and [dʒ] as in *James, badger, judge*. (de Weijer, 2014). In the same way, affricates are sounds produced with a constriction of complete closure followed by a release phase in which friction occurs (Carr, 2013). In detail, these sounds are produced by a stop closure followed immediately by a gradual release of the closure that produces an effect characteristic of a fricative. The palatal sounds that begin and end the words *church* and *judge* are voiceless and voiced affricates, respectively. Affricates are not continuants because of the initial stop closure (Fromkin, 2018).

Thus, the two English affricates, [dʒ] and [tʃ], follow the patterns of stops and fricatives regard to the fortis/lenis distinction which means voiced/voiceless. It can be stated that [dʒ] is fully voiced only in intervocalic position (e.g. agent [edʒənt]; and in initial and final position (e.g. Jane [dʒen], fudge [fʌdʒ]) (Yavas, 2011).

2.7 Children Acquisition of Phonology

Reid (2016) argues that age is a strong determining factor influencing foreign language pronunciation. It is similarly connected to the theory of Critical Period Hypothesis (Lenneberg, 1967) in Reid (2016) which states that children between 2 and 13 can achieve native-like proficiency in acquiring a foreign language, especially pronunciation (Loewen & Reiders, 2011) in (Reid 2016).

Children that are exposed to English tend to acquire first the vowel /a/ and then /i,u/. The sequence follows from two principles. First, the vowels /a.i,u/ are maximally distinct from each other along with the vowel triangle. Second, children typically acquire segments common among the world's languages before they acquire those that are relatively rare. The vowel /a/ is universal because it exists in all languages and /i,u/ are nearly universal (Parker, 1985).

While in the consonant acquisition, children exposed to English tend to acquire /p,b,m/ first and then /t/. This sequence follows from principles that first, place of articulation tends to be acquired from the front to the back of the mouth. That is, labials are acquired before palatal and velar. Second, the manner of articulation tends to be acquired from the most consonant-like to least-consonant like. This is, consonant is generally acquired in this order: stops, nasals fricatives, affricates, and liquid or from the more closed to the more open (Parker, 1985). And basically, a child at 18-24 months old is already able to produce the consonant sounds like [j], [p], [b], [d], [t], [m], and [n] (Hutauruk, 2015).

3. Methods

This study employed a case study to get an in-depth explanation of the realization of schwa and two affricate consonants produced by a two-year-old Indonesian child. The aim was to investigate the process and phenomenon in-depth and real-context within specific boundaries

(Yin, 2003). As stated by Yin (2003), a case study can be used when the answer to how or why the question is being posed and when the object of study is a phenomenon in a real-life context. Thus, the case study was employed since it was carried out in 'a small scale, a single case', and focused on one particular instance of educational experience or practice and not to be generalized (Alwasilah, 2012).

The data are gained from a two-year-old Indonesian child who speaks English. Since the child cannot read yet, the researcher gave pictures that represent nouns or verbs that have affricate sounds, elicited the child to say the words, and then recorded the child's pronunciation. The recording then transcribed and analyzed. The observation was also employed to enrich the findings in this research since it represents the real situation of the child's language learning.

4. Findings

The result from the observation is that the child had high exposure to English from her family that speaks English. The child language learning was also supported by media such as books, videos, and songs. From the pronunciation analysis, it shows significant findings related to the voiced and voiceless post-alveolar affricate sound production by the child. They are depicted in the tables and explanations below.

4.1 Voiced Post-Alveolar Affricate [dʒ]

These are the words with voiced post-alveolar affricate that the child familiar with. There are five words with [dʒ] as the initial sound and five words with [dʒ] as the final sound. The word with [dʒ] as the medial sound was not observed in this research since the child's English vocabulary was still limited.

Table-1. Realization of voiced post-alveolar affricate consonant in initial sound of the words.

Word	GA Production	Realization
Jam	[dʒæm]	[ĵem]
Jet	[dʒet]	[ĵet]
Joy	[dʒɔɪ]	[ĵɔɪ]
Jug	[dʒʌg]	[ĵʌg]
Jump	[dʒʌmp]	[ĵʌmp]

The voiced post-alveolar affricate sounds [dʒ] in the words above could not be realized as in GA production by the child. The child consistently realized [dʒ], voiced post-alveolar affricate, as [ĵ], voiced palatal stop, like how the consonant is pronounced in Indonesian language. Some vowel sounds in the words above could be pronounced as in GA production, but the double vowel [æ] in the word jam was realized as [e].

Table-2. Realization of voiced post-alveolar affricate consonant in final sound of the words.

Word	GA Production	Realization
Age	[eɪdʒ]	[edʒ]
Cabbage	[ˈkæb.ɪdʒ]	[ˈkʌb.ɪdʒ]
Cage	[keɪdʒ]	[kedʒ]
Orange	[ˈɒr.ɪndʒ]	[ˈɒwr.ɪndʒ]
Porridge	[ˈpɒr.ɪdʒ]	[ˈpɒr.ɪdʒ]

In contrast, the words with [dʒ] sound at the final position above, surprisingly, could be pronounced by the child as in GA production. She could make a voiced post-alveolar affricate sound if it is at the final sound of the word. There are features in the productions of the vowels in the words above. The child pronounced double vowels [eɪ] as [e], [æ] as [ʌ], and in the word orange, the child added the [w] sound in the initial sound.

4.2 Voiceless Post-Alveolar Affricate [tʃ]

These are the words with voiceless post-alveolar affricate that the child familiar with. There are five words with [tʃ] as the initial sound and five words with [tʃ] as the final sound. The word with [tʃ] as the medial sound was not observed in this research since the child's English vocabulary was still limited.

Table-3. Realization of voiceless post-alveolar affricate consonant in initial sound of the words.

Word	GA Production	Realization
Chair	[tʃeər]	[tʃer]
Cheese	[tʃiːz]	[tʃiz]
Chicken	[ˈtʃɪk.ɪn]	[ˈtʃɪk.en]
Chin	[tʃɪn]	[tʃɪn]
Chocolate	[ˈtʃɒk.lət]	[ˈtʃok.lat]

The voiceless post-alveolar affricate sound [tʃ] in the words above could be realized as in GA production by the child. The child consistently realized [tʃ] as in GA production. The child also successfully realized the voiceless post-alveolar sound even though Indonesian language doesn't have this kind of consonant. The similar consonant with [tʃ] in Indonesian language is [ĉ], voiceless palatal stop, and the child can distinguish them.

Some vowel sounds in the words above could be pronounced as in GA production by the child, but the double vowel [æ] realized as [e]. Especially for the word chocolate, transcribed as [ˈtʃɒk.lət], realized as [ˈtʃok.lat] by the child. This is probably because Indonesian language borrows the word chocolate as coklat, hence the child is familiar with the sound. Here, the child assimilated non-native sounds to the native sounds that they perceive as most similar, as proposed by Best (1995) in Yavas (2011).

Table-4. Realization of voiceless post-alveolar affricate consonant in final sound of the words.

Word	GA Production	Realization
Catch	[kætʃ]	[ketʃ]
Hatch	[hætʃ]	[hetʃ]
Haunch	[hɔːntʃ]	[hɔːntʃ]
Match	[mætʃ]	[metʃ]
Watch	[wɒtʃ]	[wɒtʃ]

The words above with voiceless post-alveolar affricate in the final sounds could be realized as in GA production by the child. Again, the child successfully produced the voiceless post-alveolar affricate initial sound as in GA production. However, the child realized the other sounds of the words unlike the production of GA. From the analysis of the ten words that have

voiceless post-alveolar affricate consonants that realized by the child, all of the [tʃ] initial sounds can be realized as in GA production.

5. Discussion

From the observation, it was found that the other family members in the child's family use English in their daily conversation. The adults in the family also provide the child an interaction to foster both intellectual and language development so the child's language learning is advanced, in accordance with Vygotsky's theory in 1962 as cited by Linse (2015). Piagetian stages of development as cited by Pinter (2006) is also associated with this child because she manipulated objects around them including sound production that they hear.

However, this child could not achieve native-like proficiency yet in acquiring a foreign language, especially pronunciation as stated by (Loewen & Reiders, 2011) in (Reid, 2016). It is mentioned that this Critical Period Hypothesis (Lenneberg, 1967) in Reid (2016) is experienced by children between 2 and 13, since the child is still 2 years old, she still has a long way to go through the stages of language learning, especially phonology.

While in sound production, this two-year-old child had difficulties in producing the voiced post-alveolar affricate consonant in the initial position of the words. She produced the [dʒ] sounds as [ĵ], voiced palatal stop, like how the consonant is pronounced in Indonesian language. On the contrary, the child produced the [dʒ] sounds in the final position of the words as the GA production with ease. This was because the child was not able to force the airstream yet when the vocal chords are together if it is at the initial sound of the word.

The voiceless post-alveolar affricate sounds in the words, both in initial and final positions, produced as in GA production by the child. The child could put apart vocal chords in producing voiceless sound easily, then there was a constriction between the blade of the tongue and the post-alveolar, and at last, there was a stop closure followed immediately by a gradual release of the closure that produces the affricate consonant. It means it was easier for the child to produce voiceless than voiced post-alveolar affricate, especially in the initial sound of the word. There are also features in the vowel sounds in the words, especially on double vowels or diphthongs. The child realized [æ] as [e] or [ʌ] and [eɪ] as [e].

6. Conclusion

From the analysis, there is a significant result that the child could realize the voiceless post-alveolar affricate [tʃ] in the initial and final sounds of the ten words as in GA production. She did not have difficulties in putting the vocal cords apart so that air flows freely through the glottis into the oral cavity, then there was a constriction between the blade of the tongue and the post-alveolar, and at last, there is a stop closure followed immediately by a gradual release of the closure.

However, she realized the voiced post-alveolar affricate [dʒ] in initial sounds as [ĵ], as to how it is pronounced in Indonesian language, but she realized the sound in the final position as in GA production. It is more difficult for her to pronounce voiced post-alveolar sounds, especially if it is in the initial position.

The post-alveolar sounds are not sounds that acquire first by children since they are more complex than bilabial or alveolar sounds. However, this two-year-old child could produce the sounds, even though she is still struggling with the voiced one because she has exposure to English since an early age, or in her golden age.

The vowels realizations are also featured since the vowels on the target words are not the first vowels that acquired by children. The children acquire /a,i,u/ sounds first, then the other sounds. Some of vowels in the target words, especially the double vowels or diphthongs are realized by /a/ and /e/.

This study contributes in helping English teachers to teach their students, especially children, to pronounce English words and to contribute to the field of phonetics and phonology especially in teaching English pronunciations to EFL learners. The correct pronunciation is, without doubt, a fundamental feature of successful communication in the English language. Thus, attention should be paid to teaching pronunciation right from the beginning of English language teaching.

The period of this case study narrows. However, the researcher suggests parents or teachers take advantage of children's golden age in developing language acquisition to do research on other phonological aspects. It is supported by the Native Language Magnet theory (NLM), developed by Kuhl (1991, 1993, 2000) (in Yavas, 2011), which aims at explaining the development of speech perception from infancy to adulthood. Very young infants are capable to hear all differences among the sounds in human languages, whereas adults display a reduced discrimination sensitivity outside their native language.

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