PAPER – OPEN ACCESS

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DOI : 10.32734/lwsa.v7i2.2059
Electronic ISSN : 2654-7066
Print ISSN : 2654-7058

Volume 7 Issue 2 – 2022 TALENTA Conference Series: Local Wisdom, Social, and Arts (LWSA)

LWSA Conference Series 07 (2024)
TALENTA Conference Series
Available online at https://talentaconfseries.usu.ac.id

Phonological Acquisition of Indonesian in Down Syndrome Children at SLB E Negeri Pembina Tingkat Provinsi Sumatera Utara, Medan (Psycholinguistic Studies)

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Abstract

Language acquisition is a process that develops in the brain while acquiring language and a communication tool that can convey meaning. Language acquisition can be phonological, morphological, syntactic, or semantic. In this study, the authors focused on phonological acquisition. Phonological acquisition relates to the speech sounds produced by children when pronouncing certain sounds. The sounds in question are sounds produced by human articulation. The phonological acquisition in this paper focuses on vowel and consonant sounds in Indonesian. The author focuses his writing on the acquisition of Indonesian phonology in down syndrome children. This writing aims to find out what vowel sounds and consonants can be produced by down syndrome children in SLB E Negeri Pembina Tingkat Provinsi Sumatera Utara, Medan. There're five participants with down syndrome children as research subjects. This study used Blumstein and Kohn's theory of speech sound change and Roman Jacobson's theory. The method of data collection is listened and technique is the tapping. This method analyses vowel and consonant speech sounds obtained by participants at words' beginning, middle, and end. The first result obtained from the study was that of the five participants there was a change in speech sounds. Changes in speech sounds are sound completion (Omission) and sound addition (Substitution). From the data on changes in speech sounds, it was obtained that down syndrome children can already produce several vowels in Indonesian, namely [i],[u],[e],[o],and[a]. The consonants that can be obtained are [b],[p],[t],[d],[l],[k],[s],[m],[n],[d],[t], and [c].

Keywords: Phonological acquisition; down syndrome; Indonesian; changes in speech sound

1. Introduction

Language acquisition occurs in a child's brain when he acquires his first language or mother tong1ue, which means language acquisition in relation to his first language. This is a creative process in which language rules are learned by children based on the input they receive from the simplest to the most complex forms. Children will master language faster if they acquire language in the golden period or the ideal period (critical age) which is the age of 6-15 years.

Language acquisition can be syntactic, semantic, or phonological. Phonology is the most basic study. This is because phonology involves the sounds of language as the result of a series of segmentation stages. Phonology examines language sounds as the smallest unit of speech along with the combination of sounds that form syllables or syllables as well as with suprasegmental elements such as stress, tone, stop, and duration [1].

Phonological acquisition is related to the acquisition of language sounds received by children both from the surrounding environment and those closest to them. The phonological acquisition can usually be observed when a child is able to make a variety of sounds, both vowel and consonant sounds. These sounds are part of the language.

Language is a formal system for pairing signals with meaning. This pair can go well when people produce a sentence, they use language to encode the meaning they want to convey into the sequence of speech sounds [2].

Indonesian is one of the languages used to communicate for its speakers. Apart from being a means of communication, this language also has several functions including (a) a symbol of national pride; (b) emblematic national identity; (c) tools for unifying various peoples with different socio-cultural and linguistic backgrounds, (d) tools for intercultural and inter-regional relations. (e) the official language of the state; (f) the official language of instruction in educational institutions; (g) the official language in relations at the national level for the purposes of development planning and implementation and governance; and (h) official language in cultural development and the use of modern science and technology [3], [4].

In Indonesian there are six vowels namely /i/, /e/, /∂/, /a/, /o/, and /u/. The consonants in Indonesian are shown in the chart below.

Selection and peer-review under responsibility of The First International Seminar on Language, Literature, Education, Arts, and Culture (1st ISoLLEAC) 2024
p-ISSN: 2654-7058, e-ISSN: 2654-7066, DOI: 10.32734/lwsa.v7i2.2059

Place of articulation / Manner of articulation		Bilabial	Labiodental	Dental/Alveolar	Palatal	Velar	Glotal
Stops	voiced	b		d	j	g	
	voiceless	p		t	c	k	
Fricatives	voiced				z		
	voiceless		f	s		x	h
Nasals	voiced	M		n			
Tril	voiced			r			
Glides	voiced			l			
Prenasalised stop	voiced				y		

Fig. 1. Chart of Indonesian consonants

Down syndrome children also need language to communicate with others. But because of the disruption in brain function, it makes it difficult for them to acquire language and communicate with others. Down syndrome children have genetic developmental disorders associated with intellectual disabilities[5] ;[6]. Down syndrome children have difficulty communicating with people around them. Because of their stunted development, Down syndrome children when communicating with children their age also experience difficulties. This difficulty can also be a barrier for children to develop language skills.

From studies that have been conducted on Down syndrome children, it was found that there are changes in sound, for example: [tas] → [ta], [kursi] → [kuci], [telur] → [telU], [sepatu] → [patu], [pesawat] → [sawat] [7]. The fricative consonant sound [s] at the beginning and end of the words tas and sepatu will fade into [ta] and [patu]. The alveolar consonant sound [r] in the words kursi and telur in the middle and at the end is also lested to [kuci] and telU]. The vowel sound [e] is not round in the middle of the word pesawat also lest it becomes [sawat]. In general, down syndrome children when pronouncing a sound will eliminate sounds at the beginning of words and at the end of words. Another example when they produced subsititution sound, [biru] → [biyu], [baju] → [waju], [sampah] → [wampuh], and [tujuh] → [tusu].

The sound of apikoalveolar [r] on the word biru undergoes the exchange of sounds into laminoalveolar sounds [y] into [biyu]. The sound when the voice [b] on the word baju will experience the exchange of sound into a semivocal sound [w]. The sound of the laminopalatal consonant of voiceless friction [s] on the sampah word turns into a semi-vowel labiodental [w] into [wampuh]. The sound of laminopalatal africat voiced [j] on the word tujuh will turn into a laminopalatal sound, voiceless friction [s] into [tusu].

Another sound that can find in down syndrome children is addition, for example, [habis] → [hambis], [Apin] → [ampin] [8]. The addition of sounds occurs after the sound at the beginning of the word. The addition of the sound that occurs is the bilabial nasal sound [m].

Research on Down syndrome children has been done as well as research on the language skills of Down syndrome children. Research on the acquisition of phonology of various languages in Down syndrome children has been conducted by several researchers, including Andreou [9], Herlina [10], Lubis [11], and Lestari [12], Research conducted on Down syndrome children with different age ranges but equally specialized in phonological acquisition studies on consonants and vowels. From the results of their research, it was found that there was a change in the sound of speech. The resulting speech sound is melting. Speech sound errors both vowel and consonant sounds from the results of the studies above found the same errors as stated by Blumstein [13] and Khon [14], namely: 1) Sound absorption errors (omission), 2) Sound exchange (substitution), 3) addition of sounds (addition) and 4) language regularity (metathesis). After getting the sound changes that occur, the data is analyzed to find out what vowel sounds and consonants have been obtained by the child using the theory of phonological acquisition by Roman Jacobson on [1].

SLB E Pembina Tingkat Provinsi Sumatera Itara, Medan is one of the schools that handles Down syndrome children. In this school, there is a phenomenon that Down syndrome children who have entered pre-school age, but they are still disturbed in language. They have not been able to pronounce vowel and consonant sounds that interfere with them in communicating with people around them.

Research on Down syndrome has been done by several researchers. However, previous research studies have only been on the analysis of vowel and consonant sounds in certain languages. This study will continue to focus on vowel and consonant acquisition Indonesian will continue to analyze vowel and consonant sounds using the results of sounds produced in Down syndrome children, not on the actual sounds in Indonesian. In this study, the author will use psycholinguistic studies. Psycholinguistics is one of the interdisciplinary sciences whose studies are one of the studies on language acquisition in children.

In this study, the authors want to continue research that has been held previously but in a different age range from the previous age. This study will still look for phonological acquisition, especially vowel and consonant sounds in Down syndrome children.

2. Methods

This research is qualitative research. The data of this study are vowel sounds and Indonesian consonants spoken by down syndrome children in SLB E Negeri Pembina, Medan. To get data, the author uses images as the medium. The source of the data was the five respondents of Down syndrome children, namely MT, MY, CP, RS, and PS as well as class teachers. In data collection, the record and record method is used.

3. Results and Discussion

From the five respondents, it was found that there was a change in speech sounds, namely the removal of sounds (Omission) and the addition of sounds (Substitution), this can be seen from the data below:

After the five respondents said some words, the author analyzed the vowel and consonant sounds that they had produced. Here are some data on vowel and consonant sounds that have been produced by MT,MY,CP,RS and PS.

Table 1. Vowel and Consonant Acquisition of MT.

Sound	Beginning Word	Middle Word	Ending word
[b]	[lebar] → [ba]	[obat] → [oba]	[jawab] → [wab]
[p]	[tOpi] → [pi]	[sapu] → [apu]	[sulap] → [lap]
[t]	[kasih] → [te]	[ikan] → [itan]	[coklat] → [tat]
[l]	[kɔlak] → [lak]	[pulang] → [ula]	[salam] → [al]

Table 2. Vowel and Consonant Acquisition of MY.

Sound	Beginning Word	Middle Word	Ending word
[b]	[lebar] → [ban]	[obat] → [oba]	[jawab] → [ub]
[p]	[tOpi] → [pi]	[sapu] → [apu]	[sulap] → [ulap]

[t]	[kasih] → [ti]	[ikan] → [itan]	[coklat] → [odat]
[l]	[kɔlak] → [la]	[pulang] → [ola]	[salam] → [al]

Table 3. Vowels and Consonants of CP.

Sound	Beginning Word	Middle Word	Ending word
[b]	[lebar] → [ban]	[obat] → [oba]	[jawab] → [wab]
[p]	[tOpi] → [pi]	[sapu] → [apu]	[sulap] → [lap]
[t]	[bakso] → [to]	[ranting] → [ati]	[coklat] → [oat]
[l]	[baru] → [lu]	[orang] → [ola]	[salam] → [al]

Table 4. Vowels and Consonants of RS.

Sound	Beginning Word	Middle Word	Ending word
[b]	[lebar] → [ba]	[obat] → [oba]	[jawab] → [awab]
[p]	[tOpi] → [pi]	[sapu] → [apu]	[sulap] → [lap]
[t]	[kasih] → [te]	[ikan] → [itan]	[coklat] → [tat]
[l]	[kɔlak] → [lak]	[pulang] → [ula]	[salam] → [al]

Table 5. Vowels and Consonants of PS.

Sound	Beginning Word	Middle Word	Ending word
[b]	[lebar] → [ba]	[obat] → [oba]	[jawab] → [ab]
[p]	[tOpi] → [pi]	[sapu] → [apu]	[sulap] → [yap]
[t]	[kasih] → [ti]	[ikan] → [itan]	[coklat] → [kat]
[l]	[kɔlak] → [lak]	[pulang] → [ula]	[ipar] → [pal]

By using the theory of speech sound changes Blumstein (1994), and Khon (1993) in Gustianingsih (2014 and 2015), several sound changes were found in five respondents, namely:

a. Omission

MT when pronouncing words lebar occurs in the emission of sounds [l], [e], and [r]. MT is only capable of producing [ba]. MT when pronouncing the word kolak also occurs omission of the sound [k]at the beginning of the word, the sound [ɔ] is smeared so that the production of sound acquisition becomes [lak]. MT when pronouncing the word topi also occurs the emission [t] at the beginning of the word and the vowel sound [o] in the middle of the word. The child is only capable of producing [pi].

MY also suffers from sound loss, as in sound [b]. When pronouncing the sound [lebar], it is only able to produce [ban], [obat] becomes [oba] and [jawab] becomes [ub]. MY makes omission both at the beginning of the word, the middle of the word and the end of the word.

The same is the case with CP. It also undergoes omission. For example, when CP produces the word topi, it can only produce the sound of [pi]. Similarly, when pronouncing the word sapu, CP produces the sound to [apu]. CP removes the initial sound as in the [hat] sound to [pi].

b. Substitution

MT when pronouncing the word ikan, there is a replacement of the speech sound (substitution) of the consonant sound [t] in the middle of the word, the dorsovelar sound is voiceless so that the production of MT sound acquisition becomes [itan].

MT when pronouncing the word baju there is a substitution of the consonant sound [d] at the beginning of the word, the bilabial sound sounds [b] so that the production of MT acquisition becomes [daju].

RS also in pronouncing some words experienced a change in speech sounds such as the word ikan to [itan]. The consonant sound [k] is replaced with [t] as is the case with PS.

Judging from Bluemstein's sound change theory above, it can be said that MT can already obtain vowel sounds, namely, vowel sounds [a] in the word lebar becomes [ba], vowel [i] in the word ikan becomes [itan], vowel [u] in the word sapu [apu], vowel [o] in the word meatball [akso], vowel [e] in the word kasih becomes [te], vowel [i] in the word topi becomes [pi]. From these data in accordance with Jacobson's phonological acquisition theory, MT has passed the prelingual gaping period. This is seen by the acquisition of several vowel sounds in the Indonesian.

Respondent MY has been able to obtain vowel sounds, namely,the vowel sound [a] in the word obat becomes [oba], vowel [i] in the word tOpi becomes [pi], vowel [u] in the word sapu becomes [apu], vowel [o] in the word coklat becomes [odat]. From these data in accordance with Jacobson's phonological acquisition theory, MY has also passed the prelingual gaping period. This is seen by the acquisition of several vowel sounds in the Indonesian.

CP can already obtain vowel sounds, namely, vowel sounds [a] in the word lebar becomes [ban], vowel [i] in the word topi becomes [pi], vowel [u] in the word sapu [apu], vowel [o] in the word bakso becomes [to]. From these data in accordance with Jacobson's phonological acquisition theory, CP has passed the prelingual gaping period. This is seen by the acquisition of several vowel sounds in the Indonesian.

RS can already obtain vowel sounds, namely, vowel sounds [a] in the word kolak becomes [lak], vowel [i] in the word ikan becomes [itan], vowel [u] in the word sapu [apu]. From these data in accordance with Jacobson's phonological acquisition theory, RS has passed the prelingual gaping period. This is seen by the acquisition of several vowel sounds in the Indonesian.

PS can already obtain vowel sounds, namely, vowel sounds [a] in the word coklat becomes [kat], vowel [i] in the word topi becomes [pi], vowel [u] in the word pulang [ula], vowel [o] in the word obat becomes [oba]. From these data in accordance with Jacobson's phonological acquisition theory, PS has passed the prelingual gaping period. This is seen by the acquisition of several vowel sounds in the Indonesian.

In addition to vowel sounds, the five responses have also acquired several consonant sounds. From the data above, the following is the acquisition of consonants. MT has also acquired some consonant sounds such as, sounds consonant [b], on the word lebar → [ba], consonant [t], on the word kasih → [te], consonant [l], on the word kolak → [lak], consonant [k], on the word kolak → [lak], consonant [p], on the word topi → [pi], consonan[d] on the word baju → [daju].

From the data, MY has obtained several consonant sounds such as consonant [b] in sound [lebar] → [ban], consonant [p], [t], [l] as in the word topi → [pi], bola becomes [ola] as well as other participants.

CP has also acquired several consonants in the Indonesian that have been obtained such as the consonant sound [b] at the beginning word →[ban], in the middle word obat → [oba], and in the last word jawab → [wab]. Consonant sound [p] has been obtained at the beginning word topi → [pi], in the midle word sapu → [apu], at the end on the word sulap → [lap]. CP has also acquired other Indonesian consonants.

RS has also acquired several consonants in the Indonesian that have been obtained such as the consonant sound [b] at the beginning word lebar → [ba], in the middle word obat → [oba], and in the last word jawab → [wab]. Consonant sound [p] has been obtained at the beginning word topi → [pi], in the midle word sapu → [apu], at the end on the word sulap → [lap]. RS has also acquired other Indonesian consonants.

PS has also acquired several consonants in the Indonesian that have been obtained such as the consonant sound [b] at the beginning word lebar → [ba], in the middle word obat → [oba], and in the last word jawab → [ab]. Consonant sound [p] has been obtained at the beginning word topi → [pi], in the midle word sapu → [apu], at the end on the word sulap → [lap]. PS has also acquired other Indonesian consonants.

From the vowel and consonant data obtained by respondents, in accordance with phonological acquisition theory, the five respondents have obtained several vowel and consonant sounds Indonesian. All five respondents are at the stage of guessing one word even though it is not perfect. This is due to the delay in the formation of speech tools. In addition, because the development of speech instruments that are different from normal children causes them to find it difficult to produce words perfectly like normal children.

4. Conclusions

All five Down syndrome children experience different development from other normal children. This is due to an error in the gene. Due to delays in physical and language development, they have difficulty in communicating with people around them, including in Indonesian.

From the results of the study, it can be concluded that the five Down syndrome children experience changes in speech sounds. The sound changes that occur are omissions and substitutions. Down syndrome children have mastered several vowel sounds Indonesian such as [a], [i],[u],[e] and [o]. Some Indonesian consonant sounds that have been mastered such as [b],[p],[t],[d],[l],[k],[s],[m],[n],[d],[t], and [c].

Based on the acquisition of vowel sounds and consonants Indonesian in the five Down syndrome children, it can also be concluded that they have been at the stage of babylon. They can already produce vowel and consonant sounds although they are still not perfect.

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