

Phonological Acquisition of a Deaf Adolescent: A Case Study of 23 Year Old-Indonesian Man

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Abstract

This study is designed to find out how Indonesian phonemes are performed and changed in the form of words and sentences spoken by deaf young people 23 years old. This investigation employs a methodology for case studies. The aim of the research is to realize improvements in the accompanying phonemes and phonemes that are difficult for deaf teenagers to pronounce in Indonesian phrases. A 23-year-old deaf individual was the data source (informant). Data provision through the observation and listening methods require skill, recording and note making. The data were analyzed using the approach and the methodology of comparing links. The results have revealed that inhibited consonant, shift consonant, vibrating consonant experienced inconsistent phoneme changes. This means that phonology acquisition in the deaf depends on the accompanying phoneme.

Keywords: adolescent, deaf, phonology acquisition, realization of the word, and sentence

1. INTRODUCTION

Hearing and sight are two senses that help in language learning. When one cannot function properly, the language cannot function properly. In concrete terms, average people experience input from two of their five senses: sight and sound. The situation gets more complicated for deaf people when their main way of receiving language naturally and quickly is interrupted. Deaf people create obstacles that impair personal and self-adjustment, including the consequences of hearing loss. Hearing loss has an effect on the language process as well. When learning language, they exhibit distinct traits phonologically, syntactically, and semantically when opposed to those with natural hearing.

Sterne and Goswami (2000) conducted research with the title *Phonological Awareness of Syllables, Rhymes, and Phonemes in Deaf Children*. And the result showed that Although deaf children can acquire phonological awareness, their abilities lag behind those of hearing children and may develop in various ways. And Marschark, Shaver, Nagle, and Newman (2015) conducted research with the title *Predicting the Academic Achievement of Deaf and Hard-of-Hearing Students From Individual, Household, Communication, and Educational Factors*. According to research, deaf and hard-of-hearing (DHH) children's academic performance is the consequence of a complex interaction of numerous elements. These determinants include student characteristics (e.g., hearing thresholds, linguistic fluencies, method of communication, and communication functioning), family environment features (e.g., parent education level, socioeconomic position), and experiences within and outside of school (e.g., school placement, having been retained at grade level). And in research which was conducted by Harris (2004) with the title *Deaf Children's Use of Phonological Coding: Evidence from Reading, Spelling, and Working Memory* showed that deaf children relied more on their orthographic knowledge than hearing youngsters with comparable reading abilities. To reach this result, however, hearing children with varying reading ability would need to be tested to determine if orthographic skills predicted their reading success. The regression analysis revealed that age was such a significant predictor of their reading ability because reading increases gradually with growth in normally developing youngsters.

The key area of language development is phonological knowledge. Phonological knowledge is about the combination of linguistic characteristics and meaning. Children's phonological knowledge can be measured via verbal fluency tasks in which they rapidly recall and produce (via spoken or sign language) words or signs related to specific categories. Flow generation tasks are often used to promptly generate words with certain (phonological) language features (such the same beginning sound or hand shape (sign language), in one minute) (Marschark et al., 2015; Mitrushina, Boone, Razani, & D'Elia, 2005; Morere, Witkin, & Murphy, 2012; Tombaugh, Kozak, & Rees, 1999; Strauss, Sherman, & Spreen, 2006; Wechsler-Kashi, Schwartz, & Cleary, 2014, Alvarez & Figueroa, 2016).

Alvarez and Figueroa (2016) conducted research with the title *Generation of Signs within Semantic and Phonological Categories: Data from Deaf Adults and Children who Use American Sign Language*. The authors used one-minute activities to study signing deaf adults' and children's semantic and phonological sign generation. The phonological challenge seemed to be more challenging than the semantic ones in general. Deaf pupils with

impairments created fewer semantic elements than their counterparts. And Bowers, Dostal, McCarthy, Schwarz, and Wolbers (2015) with the title *An Analysis of Deaf Students' Spelling Skills During a Year-Long Instructional Writing Approach*, conducted research and showed that Spelling offers particular problems for deaf or hard of hearing (d/hh) youngsters, as the majority do not develop age appropriate spelling abilities. According to the findings, spelling should be actively focused during writing courses.

Deaf people all over the world have developed visual communication methods to communicate with others. Languages such as American, British, Nicaraguan Sign Language, and Bisindo have emerged as a result of several years of users collaborating in schools and Deaf organizations (Woll, 2003; Senghas, Kita, & Özyürek, 2004; Mann, Marshall, Mason & Morgan, 2010). While several aspects of the sign language acquisition parallel to the spoken language mastering, the sign language modality can lead children to other vocabulary recognition approaches of language learning.

Across various-sized samples of the deaf student population, Gallaudet Research Institute (GRI) has reported between 28% (2013) and 46% (2009) (Alvarez & Figueroa, 2016) sign language for instruction, either alone or paired with spoken language. GRI's survey is estimated to represent about 65% of deaf/hard of hearing children in the USA (Knors & Marschark, 2012), although this percentage likely varies by the total number sampled each year. Many variables influence the development of child sign language, including hearing status of their parents and if they are using their children in sign languages, age chronological, linguistic age, language level (measured by years of signing), home language and diagnosis of disabilities (i.e., other than deafness) (Chamberlain & Mayberry, 2000; Corina, Hafer, & Welch, 2014; Marschark & Leigh, 2016; Mitchell & Karchmer, 2005; Moeller & Luetke-Stahlman, 1990; Moeller & Schick, 2006; Alvarez & Figueroa, 2016).

According to preliminary findings, deaf people have difficulty socializing. This is because people's behaviour leads them to believe that they are impossible to connect with, so contacting them takes more effort and patience than communicating with average people. In this study the writers were attracted to conduct about deaf adolescent's phonological acquisition as deaf adolescent study was still infrequently. So the writers want to investigate how the phonological acquisition on a deaf adolescent?.

2. LITERATURE REVIEW

2.1 Language Acquisition

Language is a medium that people use to communicate with one another. Humans may use language to exchange wisdom, thoughts, and facts, among other things. In other words, humans will be able to master or absorb language as long as they live, evolve, and flourish in a world that still uses language, no matter where they are. According to Brown (2008: 6), language is used to interact within a group or speech culture, and it is essentially a language for people, though it may not be limited to humans. But, of course, humans go through a method in order to learn a language.

Linguists have differing perspectives on the method of language learning. Some contend that language acquisition is a Nurture process, while others claim that language acquisition is a Natural process. Nurture language acquisition proponents are typically

linguists from the Behaviorism stream, while natural language acquisition proponents are typically nativism specialists. As a result, the discussion of this language learning process is influenced by both behaviorism and nativism.

2.2 Language Acquisition on Phonology

The term phonology is derived from a mixture of the words ‘fon’, which means sound,’ and ‘logi,’ which means science.’ So, phonology is a branch of linguistic research that studies, debates, talks about, and analyzes the sounds of language made by human speech tools (Chaer, 2009: 1).

In terms of language learning, infants have just about 20% of their adult brains at birth, compared to mammals, which have about 70%. As a result of this distinction, animals can do a variety of things after birth, while humans can only scream and rock their limbs. At 6 weeks, the infant starts to produce sounds that resemble consonants or vowels. Around 6 months of age, infants begin to merge consonants and vowels to form what is known in English as babbling, which has been converted into babbling. The chatter begins with an initial consonant, which is the inhibitory bilabial consonant and nasal bilabial. The vowel is / a /, so the structure is CV (Consonant Vocal), and it is repeated many times to form the term structure.

When they are one year old, they try to mimic the words and pronounce the sounds they hear around them, and that’s about when they say their first "words." By 18 months of age, these words multiply and begin to appear in two or three word "sentences", commonly called "telegraphic (telegraphic)" utterances. The greater the number of words spoken each day, the greater the number of sentence varieties spoken. By the age of two, infants understand more complex vocabulary and are developing their speech abilities. They are also capable of forming questions and comments. Infants make a series of noises before uttering speech sounds, including screaming, cooing, and gurgling. Infants everywhere tend to make the same sounds, even deaf ones (Lenneberg et al., 1965). Thus, the desire and proclivity to make certain sounds seem to be unlearned. Later, during the seventh month, infants typically begin to babble, producing what are known as repetitive syllables (‘syllabic reduplication’), such as ‘baba,’ ‘momo,’ and ‘panpan.’ While the majority of the syllables are of the standard Consonant + Vowel variety (‘baba’ and ‘momo’), others (‘panpan’) are closed syllables of the simple Consonant + Vowel + Consonant variety. Babbling as repetitive syllables has been shown to be developed by children in all languages studied.

The development of sounds using the intonation contours of the first language is clearly a learned phenomenon, and when children babble, they follow the intonation contours of the language they hear. This is all the deaf children who are deafeningly deafeningly deafeningly deafeningly dea Although such babies will vocalize and scream, they do not develop the ability to babble. Deaf children who are used to sign language from birth do the equivalent of babbling – with their hands (Petitto and Marentette, 1991). Children begin to say their first sentences as they reach the advanced stage of babbling. This mostly happens at the age of one year, but it can happen even sooner or later. Surprisingly, as infants begin to utter words, only some of the sounds they made while babbling appear as vocabulary. The other sounds must be learned again.

2.3 Deaf

Terminology in deaf education can be understood within two paradigms: the socio-cultural-linguistic view, which provides deaf people with a language (American Sign Language) and a culture and the medical-audiology perspective, which is concerned with ear and hearing health, diagnostics and auditory assistive technology. A deaf person's identity can be influenced by socio-cultural-linguistic factors such as culture, ethnicity, family and educational experiences, presence of Deaf community supportive networks, communication and language preferences, and the use of visual technology. Medical-audiological factors such as gender, secondary disabilities, age of onset, and extent of hearing loss, use of auditory technology, auditory factors and genetic background also affect a deaf person's identity (Leigh, 2009).

Hearing loss may be categorized as sensorineural, conductive, mixed, or central. Sensorineural losses are permanent and result from injury to the cochlea, or inner ear segment. A conductive loss is often caused by an infection in the outer or middle ear which, though acute, may impair a deaf child's language learning. A child's central hearing loss may be affected by an injury to the eighth auditory nerve all the way up to the cortex. Hearing loss can be incremental and result in lifelong irreversible hearing loss (Brown, 2009) whether it is genetically affected, noise-induced, or a combination of both, or it can be immediate, as in the case of a head wound or a virus.

2.4 Phonological Awareness

Although far less is known about the developmental process of spelling with children who are deaf or hard hearing, it is clear that they demonstrate areas of weakness in spelling not typical of their hearing peers (Allman, 2002; Colombo, Arfé, & Bronte, 2011; Harris & Moreno, 2004; Leybaert & Alegria, 1995; Sutcliffe et al., 1999). Deaf children typically do not easily acquire the phonological awareness skills that serve as the foundation for spelling development because these skills are usually learned through audition (Aaron et al., 1998; Alamargot et al., 2006; Sterne & Goswami, 2000; Bowers et al, 2015). The findings of research examining the importance of phonetic knowledge for the spelling of deaf children are ambiguous. As reported by Leybaert and Alegria (1995), it is more difficult for deaf students to display words that are phonologically unclear than words that have clear sounds / letters. This may indicate the use of certain phonetic knowledge, as words with transparent phonetic characteristics are easier to spell. In related research Sutcliffe et al. (1999), children who enter school seem to use spelling knowledge rather than voice messages in spelling, as evidenced by their spelling mistakes. Similar to Harris and Moreno (2004), it was found that deaf children between the ages of 8 and 14 did not show a clear dependence on speech coding in the picture spelling task. Based on these results, it is clear that limited phonological awareness is often one of the reasons why children use different spelling strategies from their peers.

3. RESEARCH METHODS

The method of observation with a qualitative approach was used in this research. According to Gorman and Clayton (2005: 40), observation studies are those that "involve the systematic documentation of observed events or behavior in a natural environment."

This study employs a case study methodology. In this study, writers examined language acquisition in a 23-year-old deaf adolescent. The writers chose IJ (initial name) as a participant because IJ used to be a quiet child and felt less confident about the shortcomings he had but at this time IJ is able to speak and interact socially well. The researchers examined the participant's ability in understanding words and phrases in Indonesian, as well as changes in the accompanying phonemes and phonemes that are difficult to speak, are the subjects of this study.

The method used in this study is a descriptive method with a qualitative approach. The observation technique is a way of gathering data. It's termed the listening approach because it involves monitoring how people use words. There are also some basic tapping techniques utilized. Advanced strategies are also employed, including the following: (1) Skillful Involvement Researchers participate in the conversation in addition to completing listening activities, which is known as the listening technique. (2) Recording Methodologies, these recording methodologies. The participant's verbal communication activities in the form of words, phrases, and sentences are recorded (3) Recording technology also employs data card recording technology in addition to recording technology. The data analysis technique used in this study is observation by using phonetic transcriptions, the outcomes of the listening and recording were transcribed. The objects that were recorded were the participants' words, phrases, and sentences.

4. FINDINGS

In this study, researchers examined the language acquisition of a 23-year-old deaf person with the initials IJ. He is the second of four children. IJ has been deaf since birth. But even though he had difficulty speaking, requiring him to learn sign language, IJ also often trained himself to pronounce words and sentences in Indonesian. IJ is a smart and intelligent teenager, and has won several competitions such as being the first winner of O2SN badminton for children with special needs in 2016.

From the results of the observations that have been made, the researcher can conclude from the aspect of language acquisition, namely in the field of phonology. This section describes the realization of the articulation of words and sentences in Indonesian from a participant who is deaf.

Based on the way of resistance to air currents in the oral cavity by the point of articulation, here is the division of consonants and vowels Putri (2019).

Table: 1 The Division Of Consonants And Vowels

No	Phoneme	Type of Phoneme	Definition	Phoneme Letters
1.	Consonant	Inhibited Consonants (Stop)	Generated by abruptly blocking the flow of air at a certain place of articulation, after which the speech apparatus in the place of articulation is released again	[b], [p], [d], [t], [g], [k]

	Alloy Consonant (Affricate)	This affricate consonant sound is produced like a drag sound, only being popped up gradually	[j], [c], [y].
	Shifted Consonant (Fricative)	This fricative consonant sound is produced like the sound of a popping block, only the air is released through the gap where the air is exhaled.	[v], [f], [z], [s], [h], [x].
	Vibrating Consonant (Trill)	The sound that is produced by articulating the tip of the tongue at the alveolar and is released very quickly so that sound vibrations occur.	[r]
	Side Sounds (Lateral)	This side (lateral) consonant sound is produced by closing the air current at the point of articulation, but air exiting through both sides (sides) of the tongue	[l]
	Nasal Consonants (Nasal)	Nasal consonants are produced by blocking the outflow of air through the oral cavity, but opening a way for it to escape through the nasal cavity (moving the uvula down)	[m], [n], [ng], [ny]
	Semivocoid Consonants	Semivocoid sounds actually include consonant sounds, but their quality is determined not only by the narrow grooves between the articulators, but by the mouth (lips)	[w], [y]
2.	Vocal		[a], [e], [i], [o], [u]

4.1 Realization of Word Articulation

In the word '*pelukis*' (drawer) IJ pronounced the word to be [me:ukis]. In this word there is a change in the phoneme / p / to / m /. Not only that, the phoneme / l / changed to / : / because IJ had difficulty reading the phoneme / l /.

The participant pronounced the word '*laki-laki*' (man). The participant pronounced the word [laghi-laghi]. There is a change in the phoneme / k / to / gh / at the onset of the syllable [ki].

Pronunciation of '*cerita*' (story) IJ pronounced the word [ce: ita]. The change contained in the word is the phoneme / r / becomes / : / which means illegible. The participant cannot pronounce the consonant phoneme / r /, therefore the sound / : / appears in the pronunciation of the word..

Furthermore, the pronunciation of the word '*hamparan*' is pronounced as [ahmpasan]. There are two phoneme changes that occur in this word, including the change in phoneme / ham / to / ahm /, the participant cannot pronounce the adjoining phoneme / h / and / a / so that the sound / ahm / appears. The second is the change in the phoneme / r / to / s /. When

pronouncing the word 'hamparan', IJ forced himself to say the word so he changed the phoneme / r / to / s /.

4.2 Realization of Sentence Articulation

Participant was given the opportunity to ask researchers and ask where researchers are continuing their studies. Pronunciation of the interrogative sentence 'kamu kuliah dimana?' (where do you study?) pronounced by the participant to be 'amu ulia mana'. There was a deletion of the phoneme / k / in the word [kamu (you)], and there was also the omission of the phoneme / k / and / h / in the word [kuliah (lecture)]. Participant gave questions accompanied by the use of sign language.

Then the researchers gave several questions about the competitions that participants had participated in, then he answered "(membuat) bola lampu juara dua di medan. Dan (lomba) badminton juara satu)" "(Made) light bulb as the second winner in Medan. And (competition) first place in badminton)" the participant said to be "lapu ola. Jua:a ua di medanj. Mitoj ju:a atuu" by using several sign languages. When pronouncing many words at one time, the participant eliminates many phonemes such as removing the phoneme / m / in the word [bola (ball)], removing the phoneme / b / in the word [bola], removing the phoneme / ra / in the word [juara (champion)], removing the phoneme / d / in word [dua (two)], omitting the onset of the syllable / bad / in word [badminton (badminton)] and omitting the phoneme / s / in word [satu (one)]. Apart from omitting, the participants also changed the phoneme / n / to the phoneme / ŋ / in the word [medan] and also [minton].

4.3 Phoneme Change

Based on the results of the study, it can be seen that the words spoken by the participants experienced inconsistent phoneme changes. The change in the word depends on the phoneme accompanying the word. For vowels, participant did not experience sound changes at the beginning, middle, or end of words. The vowel phonemes include the phoneme / a /, / e /, / i /, / o /, / u /.

There are several consonant phonemes that experience sound changes. Here are classified sound changes based on the type of consonant (1) Inhibited Consonant, (2) Alloy Consonant, (3) Shift Consonant, (4) Vibrating Consonant, (5) Side Consonant, (6) Nasal Consonant, and (7) Consonant Semivochoid.

Inhibited Consonants

There are several inhibit / stop sounds that undergo phoneme changes and omissions, namely the / p /, / t /, / g /, / k / sounds.

[pelukis] (drawer) → [me:ukis]

Change phoneme / p / to phoneme / m /

[kolaborasi] (collaboration) → [olabo:asi]

In this word, the phoneme / k / is omitted.

[tempat] (place) → [dempat]

Change of phoneme / t / to phoneme / d /

[gejala] (symptoms) → [jala]

Phoneme removal / g / and / e /

Alloy Consonants

There is no sound change in the guide consonant phoneme. The data that had been analyzed did not contain the mixed phoneme / j /, / c /, / y /.

Shift Consonant

There are several shifting sounds that undergo phoneme changes and omissions, namely the / f /, / s /, / h / sounds.

[fermentasi] (fermentation) → [e:mentashi]

In this word there is a deletion of the phoneme / f /

[sakit] (sick) → [cakit]

Change phoneme / s / to phoneme / c /

[hamparan] (overlay) → [ahmpasan]

In this word there is a change in the onset of the syllable [ham] to [ahm]

Vibrating Consonant

It is rare for the deaf person to pronounce the vibrating sound / r /. Even though certain words contain the phoneme / r / and can be pronounced by the deaf, they still sound unclear.

[rahasia] (secret) → [sasia]

In this word, there is a change in the onset of the syllable [ra] to [sa] as well as the removal of the onset of the syllable [ha]

Side Consonants

There is no sound change in the guide consonant phoneme. The data that had been analyzed did not contain the mixed phoneme / l /.

Nasal Consonants

The consonant phoneme guide is not subject to any sound modification. There were no mixed phonemes / m /, / n /, / ng /, / ny / in the analysed data.

Consonant Semivochoid

There is no sound change in the guide consonant phoneme. The data that had been analyzed did not contain the mixed phoneme / w / and / y /.

5. DISCUSSION

Brown (2008: 6) defined language as "the use of language to communicate within a group or speech culture," and it is essentially a language for people, albeit it may not be confined to humans. However, deaf persons have trouble socializing in this scenario. This is due to the fact that individuals's behavior encourages them to feel that they are hard to connect with, thus reaching them requires more work and patience than interacting with ordinary people.

The most important aspect of language development is phonological knowledge. The combination of linguistic features and meaning is referred to as phonological knowledge.

Children's phonological knowledge can be assessed using verbal fluency tests in which they retain and create (through spoken or sign language) words or signals linked to certain categories. Flow generation tasks are frequently used to produce words with specific (phonological) language characteristics (for example, the same beginning sound or hand shape (sign language) in one minute) quickly (Marschark et al., 2015; Mitrushina, Boone, Razani, & D'Elia, 2005; Morere, Witkin, & Murphy, 2012; Tombaugh, Kozak, & Rees, 1999; Strauss, Sherman, & Spreen, 2006; Wechsler-Kashi, Schwartz, & Cleary, 2014, Alvarez & Figueroa, 2016).

According to the findings of this study, deaf persons would suffer irregular phoneme shifts while applying words and phrases. In other words, a deaf 23-year-capacity old's to acquire phonetics is dependent on the phoneme connected to the word.

Alvarez and Figueroa (2016) published a study titled Generation of Signs within Semantic and Phonological Categories: Data from Deaf Adults and Children Using American Sign Language. As a result, the phonological challenge appeared to be more difficult than the semantic ones in general. Deaf students with disabilities produced fewer semantic components than their peers. And Bowers, Dostal, McCarthy, Schwarz, and Wolbers (2015) conducted research with the title An Analysis of Deaf Students' Spelling Skills During a Year-Long Instructional Writing Approach, and discovered that Spelling presents special challenges for deaf or hard of hearing (d/hh) children, as the majority do not develop age appropriate spelling abilities.

In this study, participants did not notice alterations in vowel phonemes when adopting words and phrases. Consonants that alter sound only exist in three consonants: (1) Inhibited consonant, (2) Shift Consonant, and (3) Vibrating Consonant. As a result, the participant has difficulty pronouncing the stressed phoneme at the beginning of the word. Deaf persons are unable to pronounce the anagrams that are given at the beginning of words. Furthermore, a deaf person who is hard of hearing cannot pronounce phonemes that begin with the sound [r].

6. CONCLUSION

Deaf people will experience inconsistent phoneme changes when applying words and sentences. In other words, the ability to learn phonetics for a deaf 23 year old depends on the phoneme attached to the word. Participant did not experience changes in vowel phonemes when implementing words and sentences. Consonants that experience sound changes only appear in certain consonants (1) Inhibited consonant, (2) Shift Consonant, (3) Vibrating Consonant. In result, participant finds it difficult to pronounce the stressed phoneme at the beginning of the word. Deaf people cannot pronounce the anagrams that are distributed at the beginning of words. In addition, a deaf person who is hard of hearing cannot pronounce phonemes that start with the sound [r].

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