



Consonant Acquisition in an Indonesian Cerebral Palsy Person

Elitaria Bestri Agustina Siregar, Mulyadi Mulyadi*, Gustianingsih Gustianingsih,
and Khairina Nasution

Universitas Sumatera Utara, Medan, Indonesia

Corresponding author mulyadi@usu.ac.id

Abstract. Language in daily communication is very important as a means of social interaction. Humans can express thoughts, ideas, emotions, and feelings with language. This study aims to describe the form of consonant acquisition of cerebral palsy children aged ten years. This research method is qualitative research through a case study approach. The data collection techniques used are the listening method and speaking method. Based on the analysis results, it is known that the acquisition of consonants in cerebral palsy children aged ten years is classified as slow because children have not been able to make consonant sounds. However, the meaning of the words spoken can be understood by others. Based on the analysis, it is known that the subject can only produce seven consonant sounds in Indonesian, namely the sounds /w/, /g/, /j/, /ʔ/, /h/, /ŋ/, /k/.

Keywords: Cerebral Palsy, Consonant, Phonology.

1 Introduction

Cerebral Palsy, called CP, is a disorder caused by non-progressive brain weakness. People with CP experience motor and speech disorders and have difficulty expressing their thoughts, so people with CP are said to have communication disorders [1], [2]. Due to the damage done to the brain, people with this disability have difficulty speaking as a result. Some people even experience visual difficulties, affecting their ability to store language (memory) because the input of information stored in memory is reduced. Referring to Odgen and Richard's semiotic philosophy [3], words are connected through their occurrence with objects. Each individual will have a visual image in their brain when presented with a word. The brain does not store data in words or numbers but in imaginary images.

Research on speech disorders has been widely conducted, not only from one discipline but cooperating with other disciplines to solve problems related to communication disorders. Especially in the case of Cerebral Palsy language, language research on people with CP is mainly carried out by researchers in the field of medicine and health, especially the fields of neurology and growth and development [4], [5], [6], [7], [8], [9], [10]; articles in education [11], [12], and many more. In comparison, linguistic researchers are less interested in this issue. Linguistic researchers very rarely discuss the language of people with CP. Linguistic research is beneficial not only for linguistics itself but also for researchers in other fields of science to solve existing problems. Some

linguistic research on the language of people with CP has been done for a long time and only discusses the language profile of people with CP [13], [14] and the expressive language ability and understanding of people with CP towards verbal language [15]. Phonology is one of the fields of linguistics that discusses the sounds of a particular language according to its function to distinguish lexical meaning in the language. Al-duais argues that phonology deals with a language's sound systems and patterns [16]. A focus for phonological and lexical studies is on establishing children's words so they become language-specific [17]. According to Ladd, the realm of language sounds and utterances is classified into the study of phonology and phonetics [18]. Furthermore, the sounds observed can distinguish meanings, known as phonemes. As we know, a phoneme is the smallest unit of sound that can show differences in meaning. For example, phonology is interesting to study in children's language acquisition because the emergence of sounds is genetic. In other words, the emergence of a sound cannot be measured by the number of years or months on the calendar because human biological development is not the same. Thus, the language acquisition of each child must have variations.

A child with cerebral palsy experiences delays and even speech impediments. Initially, some books suggested a lack of warm maternal care as the main cause, causing these cerebral palsy children to withdraw and be busy with their world. Rimland describes central nervous system disorders in children with cerebral palsy [19]. This condition is allegedly related to developmental disorders in cognitive development, language, emotions, and social interaction. So, if these obstacles are addressed quickly and appropriately, the learning process of children with cerebral palsy will also be completed on time. Their intelligence, emotions, and behavior do not develop properly.

Based on this background, the author is interested in knowing more about daily communication activities in children with cerebral palsy. The implementation of this research aims to observe the development of children's speaking skills, namely the mastery of language acquisition skills at the level of phonology. This is what underlies the researcher to study the acquisition of phonology in cerebral palsy children. This research emphasizes how cerebral palsy children use language in daily activities because each individual has different characteristics. The development of a child's speaking ability as a unique individual is exciting to study. This research focuses on language or phonology acquisition of children with cerebral palsy in daily communication: psycholinguistic studies. The subject in this study is a 7-year-old cerebral palsy child with a speech disorder with unclear pronunciation, so it is an interesting novelty for researchers.

2 Method

The research method used in this research is the descriptive qualitative method. Creswell's qualitative research explores and understands the meaning several individuals or groups ascribe to social or humanitarian problems [20]. The approach used is a case study of a boy called a respondent. Data in speech sounds are transcribed in the form of phonetic transcription. The subject of the study is a 10-year-old child with the initials

JL. Respondent was born and settled in Medan, North Sumatra, with parents and the environment using Indonesian as a daily language. Therefore, Indonesian is the first language for respondents.

Speech data was transcribed into phonetic transcriptions. Furthermore, the transcriptions were made into a corpus that would be separated as needed. The corpora were classified into phonemes and words. Moreover, all corpus in phonemes were recorded and grouped into vowel and consonant phonemes. The data collection technique uses three sequential strategic stages, namely, the method of data provision, data analysis, and the method of presenting the analysis results. The data provision method is a stage of research that describes how research data is obtained. The data analysis method is the culminating stage of the research. This stage determines whether or not the rules that are the source and target of a research obsession are found. Furthermore, the method of presenting the analysis results is the final stage that tries to express the results of the peak stage. Data collection techniques are observation and interview techniques followed by sound and video recording techniques.

3 Findings and Discussion

Based on the results of the Visual Comprehension and Phonology tests conducted on the subject, it was found that the subject could complete 10 test items well and in a very satisfactory time with the results as presented below. The process of taking the test is attached to the video documentation file.

Table 1. Subject's Consonant Sounds

Place of Articulation	Bilabial	Labiodental	Dental	Alveolar	Postalveolar	Palatal	Velar	Glottal
Type of sound								
Plosive							k g	ʔ
Nasal							ŋ	
Tap of Flap								
Fricative								h
Approximant	w					j		

Lateral																				
Aproxi- mant																				

The subject may make eight different consonant sounds if we pay attention. As a result of stiff speech muscles, the individual cannot make numerous noises. Oromotor dysfunction (affecting the voice cords, facial muscles, lips, palate, mouth, throat, esophagus, gums, teeth, and tongue) is the root cause of this issue. The voice cords, teeth, and esophagus are the only speech organs in JL's instance still working.

The tongue, which is supposed to be a speech organ that moves when speaking, is highly rigid and challenging in the subject. Given that he can't produce many consonant sounds, the subject substitutes the sound/s he can make for those he can't, as shown in the examples below.

Data (1)

Researcher : *Selamat malam.*(good evening)

Subject : [ja'a aja]

Data (2)

Mother : *Sakit kepalamu dek?*

/are you dizzy?/

Subject : *aya* {aja}

/head/

Mother: *Ini apa?* (pointing to head)

/what is this?/

Subject : *aya* {aja}

/head/

Mother: *sakit?*

/headache/

Subject : *ga* {ga}

/ no/

The subject was only able to produce the utterance {jama aja} in data 1. Some omissions occur. The fricative alveolar consonant /s/ and the unrounded middle vowel /ə/ at the beginning of the word are omitted. Then, the inhibited dental consonants/t/ and /m/ are omitted. In addition, there is a sound change from lateral dental sound /l/ to palatal semivowel/j/. The subject has a language acquisition age of 2-3 years.

Dysarthria in people with cerebral palsy is a disorder in speech muscles' tone, strength, endurance, and coordination. The lips, tongue, vocal cords, and diaphragm muscles work together to help speak clearly. Due to dysarthria, the part of the brain that controls all these organs does not work properly, making it difficult for the person to move these muscles correctly. It makes speech difficult for others to understand or can lead to slow speech.

Children with cerebral palsy have communication problems that are identified from infancy. If, in general, babies can respond and react to the stimulus given, this is not the case with people with cerebral palsy. Their movement limitations cause their bodies to be stiff, limp, limp, unable to coordinate the movements of their arms and legs and their speech muscles. They can experience speech delays, speak unclearly, and experience

some other speech difficulties. Early treatment of these problems can be very beneficial through speech or language therapists and medical rehabilitation teams.

4 Conclusion

Based on the results and discussion, it can be concluded that the subject dares to convey his ideas. He still needs to improve in speaking, and some things still need to be corrected in pronouncing words/sentences. It looks very difficult when the subject wants to speak, and this is because the subject's vocabulary still needs to be improved. The subject's language acquisition can be enhanced through speech or language therapists and medical rehabilitation teams; many treatment recommendations can be helpful for people with cerebral palsy.

References

1. Pirila, Silja, Jaap van der Meere, Taina Pentikainen, Pirjo Ruusu-Niemi, Raija Korpela, Jenni Kilpinen, dan Pirkko Nieminen. 2007. "Language and Motor Speech Skills in Children with Cerebral Palsy." *Journal of Communication Disorders* 40(2):116–28.
2. Soriano, Jennifer U., dan Katherine C. Hustad. 2021. "Speech-Language Profile Groups in School Aged Children with Cerebral Palsy: Nonverbal Cognition, Receptive Language, Speech Intelligibility, and Motor Function." *Developmental Neurorehabilitation* 24(2):118–29.
3. McElvenny, James. 2014. "Ogden and Richards' The Meaning of Meaning and Early Analytic Philosophy." *Language Sciences* 41:212–21.
4. Pennington, Lindsay. 2008. "Cerebral Palsy and Communication." *Paediatrics and Child Health* 18(9):405–9.
5. Hustad, Katherine C., Kristen Allison, Emily McFadd, dan Katherine Riehle. 2014. "Speech and Language Development in 2-Year-Old Children with Cerebral Palsy." *Developmental Neurorehabilitation* 17(3):167–75.
6. Hustad, Katherine C., Kristin Gorton, dan Jimin Lee. 2010. "Classification of Speech and Language Profiles in 4-Year-Old Children with Cerebral Palsy: A Prospective Preliminary Study."
7. Geytenbeek, Joke J. M., R. Jeroen Vermeulen, Jules G. Becher, dan Kim J. Oostrom. 2015. "Comprehension of Spoken Language in Non-speaking Children with Severe Cerebral Palsy: An Explorative Study on Associations with Motor Type and Disabilities." *Developmental Medicine & Child Neurology* 57(3):294–300.
8. Mei, Cristina, Sheena Reilly, Dinah Reddihough, Fiona Mensah, dan Angela Morgan. 2014. "Motor Speech Impairment, Activity, and Participation in Children with Cerebral Palsy." *International Journal of Speech-Language Pathology* 16(4):427–35.
9. Mei, Cristina, Sheena Reilly, Dinah Reddihough, Fiona Mensah, Lindsay Pennington, dan Angela Morgan. 2016. "Language Outcomes of Children with Cerebral Palsy Aged 5 Years and 6 Years: A Population-based Study."

- Developmental Medicine & Child Neurology* 58(6):605–11.
10. Sakash, Ashley, Aimee Teo Broman, Paul J. Rathouz, dan Katherine C. Hustad. 2018. "Executive Function in School-Aged Children with Cerebral Palsy: Relationship with Speech and Language." *Research in Developmental Disabilities* 78:136–44.
 11. Setiawan, Alan Tresno. 2012. "Efektivitas Media Puzzle Untuk Meningkatkan Kemampuan Menyusun Kalimat Bagi Cerebral Palsy." *Jurnal Penelitian Pendidikan Khusus* 1(3).
 12. Aditama, Furri Kurnia. 2018. "Performansi Komunikasi Anak Cerebral Palsy YPAC Surabaya (Studi Kasus Cerebral Palsy Klasifikasi Spastic)." *Lingua Franca: Jurnal Bahasa, Sastra, Dan Pengajarannya* 2(1).
 13. Berninger, Virginia Wise, dan Bruce Gans. 1986. "Language Profiles in Nonspeaking Individuals of Normal Intelligence with Severe Cerebral Palsy." *Augmentative and Alternative Communication* 2(2):45–50.
 14. Sandberg, Annika Dahlgren, dan Erland Hjelmquist. 1997. "Language and Literacy in Nonvocal Children with Cerebral Palsy." *Reading and Writing* 9(2):107–33.
 15. Sigurdardottir, Solveig, dan Torstein Vik. 2011. "Speech, Expressive Language, and Verbal Cognition of Preschool Children with Cerebral Palsy in Iceland." *Developmental Medicine & Child Neurology* 53(1):74–80.
 16. Alduais. A.M.S. (2015). An Account of Phonetics and Phonology as Similar Identical or Different. *The International Journal of Indian Psychology*, Vol 3 No 1 PP 157-165.
 17. Johson, C. E., & Wilson, I. L. (2002). Phonetic evidence for early language Differentiation: Research issues and some preliminary data. *The International Journal of Bilingualism*, Vol 6 No 3 PP 271-289.
 18. Ladd, D. R. (2011). *Phonetics in Phonology*. Wiley-Blackwell, Chichester.
 19. Ginanjar, A. S. 2007. *Memahami Spektrum Autistik Secara Holistik*. Disertasi. Program Pasca Sarjana Fakkultas Psikologi UI.
 20. Creswell, J. (2017). *Research Design Pendekatan Metode Kualitatif, Kuantitatif, dan Campuran*. Yogyakarta: Pustaka Pelajar.

Open Access This chapter is licensed under the terms of the Creative Commons Attribution-NonCommercial 4.0 International License (<http://creativecommons.org/licenses/by-nc/4.0/>), which permits any noncommercial use, sharing, adaptation, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons license and indicate if changes were made.

The images or other third party material in this chapter are included in the chapter's Creative Commons license, unless indicated otherwise in a credit line to the material. If material is not included in the chapter's Creative Commons license and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder.

