

## Phonology Acquisition for 3-4 Years Old Children: Deletion of Bilabial Consonant Sounds B and P at the Beginning of Words

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**Abstract:** This study aims to examine the process of phonological acquisition in children aged 3-4 years, focusing on the deletion of bilabial consonants /b/ and /p/ at the beginning of words. The deletion of bilabial consonants is a form of phonological simplification that is commonly found in children in the early stages of language acquisition. This study uses a longitudinal approach, in which children's phonological development is observed periodically over a certain period to understand the pattern of sound deletion and the factors that influence it. The research method involves observing and recording data on the production of children's words containing bilabial consonants in the initial position. The data are then analyzed to determine the frequency of sound deletion and to identify general patterns in the process of phonological acquisition. The results of the study indicate that the deletion of sounds /b/ and /p/ at the beginning of words occurs more often in children who are in the early stages of phonological development but tends to decrease with age and the development of articulation skills. This study is expected to contribute to a deeper understanding of children's language development, especially the acquisition of bilabial consonant sounds. The results can also be useful for detecting phonological disorders early and providing a basis for speech therapy intervention if needed.

**Keywords:** phonological acquisition, early childhood, bilabial consonants, sound deletion, longitudinal.

### INTRODUCTION

Phonological acquisition in children is an important part of language and communication development. At the age of 3-4 years, children begin to form and organize a complex language sound system, although this development is still often marked by several pronunciation errors, such as the omission of consonant sounds. One phenomenon that often occurs is the omission of bilabial consonants, such as /b/ and /p/, especially in the initial position of the word. This phenomenon is interesting to study because bilabial consonants are one of the first consonants that are usually produced by children in the process of articulation development. (Amadi-Nna & Ngulube, 2024; Unubi & Sunday Abraham, 2019). Experience and participation are very important for the language process and cognitive and communication abilities. According to Snow: language acquisition is the result of an interaction process between mother and child that begins in infancy, where the child makes an equally important contribution to the mother (Endevelt-Shapira, *et al.*, 2024). Vygotsky (1978) also said that through contact with others, children acquire language. Other opinions on this topic support the importance of experience and involvement in children's language development. Researchers also claim that to develop thinking and build ideas about the environment, children get help from their linguistic experience. (Johnston, n.d.; O'Reilly, *et al.*, 2022).

The deletion of bilabial consonants at the beginning of words is of concern because the sounds /b/ and /p/ are usually included in the first group of sounds mastered by children in their phonological development. However, at the age of 3-4 years, some children still show this deletion pattern, which can be caused by various factors, including oral motor limitations or immaturity of the phonological system. This phenomenon is important to understand because it can be an indicator of normal language development or it can also indicate a phonological disorder in children (Prince, 2023; Turki, 2022).

Longitudinal research on bilabial omission in early childhood can provide in-depth insights into how children develop their phonological skills over time. This observation is important for understanding normal patterns in language acquisition, as well as being a basis for early detection of possible phonological disorders. (Astle, *et al.*, 2022; Goleman, Daniel; Boyatzis, Richard; Mckee, 2019). Several previous studies have shown that omission often occurs as part of a language simplification strategy in young children when children have not fully mastered correct articulation. This study will examine in depth the process of phonological acquisition in children aged 3-4 years with a focus on the omission of bilabial consonants /b/ and /p/ at the beginning of words. By using a longitudinal study method, it is hoped that this study can provide a picture of children's phonological development over time, as

well as the factors that influence the phenomenon of omission.

## RESEARCH METHODS

This research is a descriptive study that will present the data as it is. Data from this study will be analyzed using qualitative methods because it is not numerical data. Therefore, this data as a whole can be called qualitative descriptive research, using a cross-longitudinal approach. Research with a longitudinal approach (longitudinal approach) is research that examines the development of an aspect or something over an entire period of time, or a fairly long stage of development. Research with a cross-sectional approach is research in one stage or one period of time. (Lewis & Buffel, 2020; Saqr, *et al.*, 2023; Skjuve, *et al.*, 2022)

## RESULTS AND DISCUSSION

This study is a case study of two children who are hereinafter referred to as respondents, data in the form of speech transcribed in the form of phonetic transcripts, taken from October 24 to December 14, 2024 in 2 collations, namely, Klender and Kwitang, Jakarta. At the time of data collection, the respondents were three years two months old and four years nine months old.

Respondent 1, three years old, was raised by his mother and his maternal grandmother. His father is

Javanese and his mother is from the Batak Karo tribe. Every day the respondent's father and mother take him to his grandmother's house and his grandmother fully cares for Respondent 1. At home there are aunts, uncles, grandmothers, grandfathers, his aunt is married and has 1 child who is six months old. The languages used at home are Indonesian and Batak Karo, at school Indonesian. The location of the house which is close to the market and densely populated allows Respondent 1 to play and befriend the neighbors on the left and right of his house.

Respondent 2, aged four years old, is raised by both parents, but when he goes to work, Respondent 2 is left at his grandmother's house in Pramuka. This family comes from the same tribe, namely Batak Toba. Respondent 2 only attends formal school every Monday to Friday, three times a week. Respondent 2 also studies ballet in Kemang. The language used at home and at school is Indonesian. The location of the house is densely populated and also close to the Kwitang market, so Respondent 2 is not allowed to leave the house.

## 1. RESULTS

### A. Bilabial Developmental Work Analysis B and P

**Table 1:** Overall Analysis of Recordings 1-6 from Bilabial Developmental Work Analysis B and P

No	Utterances	Analysis	
		B	P
1.	mau.... Nih	-	-
2.	eyan... eyan... nuh	-	+
3.	Iiihhh...	-	-
4.	Elum	+	-
5.	Apan terbang	-	-
6.	Nih..	-	-
7.	Ikh	-	-
8.	Ikh	-	-
9.	mamamamamamamamamam.... Mamam	-	-
10.	Ma... moci..	-	+
11.	Nih.... Tepas... tepas ... tepas... yuk... nih tepas...	-	-
12.	Tepas	-	-

No	Utterances	Analysis	
		B	P
13.	Tepas	-	-
14.	tepas... nih... nih...	-	-
15.	apa tuh... ta pi yen	-	-
16.	yeh... ta pi.. ta api tuh...	-	-
17.	ta api....	-	--
18.	ta api....	-	-
19.	nih... ta pi...	-	-
20.	na... ta api..	-	-
21.	utan... aluto...	+	-
22.	ta... pi...	-	-
23.	Ta.. da...	-	-
24.	yeyeyeyeyeyey....	-	-
25.	otol...	-	-
26.	Ta... tata ayah... tata ayah...	-	-
	<b>TOTAL</b>	<b>2</b>	<b>2</b>

Based on the table above, information obtained from recording sources 1-6 consisting of 26 utterances obtained bilingual consonants, namely b, as many as 2 and p also 2. This means that the subject named Respondent 1 has removed the consonants b and p, namely in the consonant p of the word [nuh] which should be [full], [moci] should be [police]. The consonant b of the word [utan] which should be [not] [elum] which should be [not].

The age of Respondent 1 who is only three years old is one of the reasons why the subject removes the consolute sound at the beginning of the word, his desire to quickly finish the word is one of the causes besides the pronunciation of b and p being rather difficult to come out when closing both lips.

According to Campbell, a three-year-old child should be able to pronounce all vowels, plus P, B, M, N, W, D, T, K, G and H, but if the child is not yet able to do so, parents need not worry, the child most likely needs more time, as expressed by Piaget, Vygotsky, Montessori, every child is unique (Crowe & McLeod, 2020; McKechnie, et

al., 2021; Peter, et al., 2022), therefore their development will differ from one another depending on the stimulation given. Respondent 1 should be taught more to follow the steps of pronouncing the sounds of the letters B, P, for example when sitting together, teach the child to: take a deep breath, after the air is collected the speech partner together induces the breath and makes the sound B, P the upper and lower lips are closed and make the sound B from the mouth together, as well as with the letter P. It is recommended for speech partners in this case parents to teach Respondent 1 to close the air from the mouth, because when observed, Respondent 1 had difficulty releasing air from the mouth, but was able to inhale air through the mouth properly. When parents become Respondent 1's speech partner, what the speech partner does is correct, namely repeating what Respondent 1 said with the correct pronunciation, so that Respondent 1 will get used to the pronunciation.

### B. Speech Data of 4-Year-Old Children

Subject Name: Respondent 2

Place and date of birth: Jakarta, March 3, 2020

Parents: IM  
Address: Jakarta

### 1. Utterance A.1.1

Place : Restaurant  
Day/date : Saturday, October 31, 2024  
Time : 19.00 WIB (evening)

Respondent 2 and his siblings were eating at a restaurant in Central Jakarta.

Mom : What does Respondent 2 want to eat?  
Respondent 2 : *aku mau makan yang tadi* (I want to eat the one from earlier)  
Mom : Why did you choose rice?  
Respondent 2 : *Ha?* \*(What?)  
Mom : What do you want to eat? Hurry up, what do you want to eat, Bi?  
Respondent 2 : *ga tau* (I don't know)... I'm annoyed that my mom keeps asking questions

**Table 2:** Analysis of Bilabial Development Work B and P

No	Utterances	Analysis	
		B	P
1	<i>aku mau makan yang tadi</i>	-	-
2	<i>ha?</i>	-	-
3	<i>ga tau...</i>	-	-
	<b>Total</b>	<b>0</b>	<b>0</b>

Based on the table above, information obtained from recording source 2 can be analyzed that Respondent 2 does not omit the consonants b or p, in fact it can be said that Respondent 2 is very fluent in speaking and there is no indication of stuttering or omission of words.

### 2. Utterance A.1.2

Place : In the Dining Room  
Day/Date : Sunday, November 1, 2024  
Time : 13.00 WIB (afternoon)

The atmosphere of Respondent 2 with his father and mother are eating together. Mother asks Respondent 2 what he wants to buy as a Christmas present from father.

Mom : what do you want to buy later when we go to the mall?  
Respondent : *princess*  
Mom : ah... always princess  
Respondent : *mau princess* (princess wants)  
Mom : something else.  
Respondent : *princess* from lego

**Table 3:** Work Analysis of Bilabial Development B and P

No	Utterances	Analysis	
		B	P
1	<i>Princess</i>	-	-
2	<i>Mau princess</i>	-	-
3	<i>Princess dari lego</i>	-	-
	<b>Jumlah</b>	<b>0</b>	<b>0</b>

Based on the table above, information obtained from recording source table 3 can be analyzed that Respondent 2 does not omit the consonants b or p, in fact it can be said that Respondent 2 is very fluent in speaking and there is no indication of stuttering or omission of words.

### 3. Utterance A.2.1

Place : In the Car  
Day/Date : Saturday, November 14, 2024  
Time : 13.00 WIB (afternoon)

The atmosphere of Respondent 2 with his father and mother is on the way. Respondent 2 tells his father what happened yesterday.

Mom : Bi... certainly with dad what happened yesterday  
 Respondent : *yang mana? Oooo... gini kata Elroy sebentar main ke rumah Responden 2,...eh, ini udah malam Elroy, Responden 2 juga udah ngantuk Elroy mau tidur* (which one? Oooo... this is what Elroy said, let's go to Respondent 2's house

for a while,... eh, it's already night Elroy, Respondent 2 is also sleepy Elroy wants to sleep).  
 Mom : what did Elroy's father say?  
 Respondent : *udah malam, terus Responden 2 juga udah mau tidur, udah* (it's already night, and Respondent 2 also wants to sleep, that's it).

**Table 4:** Work Analysis of Bilabial Development B and P

No	Utterances	Analysis	
		B	P
1	yang mana? Oooo... gini kata Elroy sebentar main ke rumah Responden 2,...eh, ini udah malam Elroy, Responden 2 juga udah ngantuk Elroy mau tidur.	-	-
2	udah malam, terus Responden 2 juga udah mau tidur, udah	-	-
	<b>Total</b>	<b>0</b>	<b>0</b>

Based on the table above, information obtained from recording source table 4 can be analyzed that Respondent 2 does not omit the consonants b or p, in fact it can be said that Respondent 2 is very fluent in speaking and there is no indication of stuttering or omission of words.

#### 4. Utterance A.2.2

Place : In the Car  
 Day/Date : Saturday, November 14, 2024  
 Time : 15.00 WIB (afternoon)

The atmosphere of Respondent 2 with his father and mother is on a trip. Respondent 2 tells his father what happened yesterday.

Mom : Ask dad... what did Respondent 2 eat?

Dad : oh yeah... what did Respondent 2 eat yesterday?  
 Respondent : *ayo papa tau gak?* (come on, dad, do you know?)  
 Dad : eat bananas?  
 Respondent : *enggak* (no)  
 Dad : eat lasagna?  
 Respondent : *ha?* (what?)  
 Dad : no... lasagna, right?  
 Respondent : *enggak* (no)  
 Dad : spaghetti  
 Respondent : *enggak* (no)  
 Dad : oh dad knows to eat white rice  
 Respondent : *bukan.... Makan nasi goreng...* (no.... Eat fried rice...)

**Table 5:** Analysis of Bilabial Development Work B and P

No	Utterances	Analysis	
		B	P
1.	ayo papa tau gak	-	-
2.	Enggak	-	-
3.	Ha?	-	-
4.	Enggak	-	-
5.	Enggak	-	-
6.	.. Makan nasi goreng...	-	-
	<b>Total</b>	<b>0</b>	<b>0</b>

Based on the table above, information obtained from recording source 5 can be analyzed as

follows: Respondent 2 does not omit the consonants b or p, in fact it can be said that

Respondent 2 is very fluent in speaking and there is no indication of lisping or omission of words.

### 5. Utterance A.2.1

Place : Bedroom

Day/Date : Saturday, December 12, 2024

Time : 21.00 WIB (evening)

After returning from Sunday school Christmas, Respondent 2, mom and dad were in the bedroom.

Mom : did you like Christmas?

Respondent : *ha?* (What?)

Mom : did you like Christmas?

Respondent : *suka* (I like it)

Papa : what did you eat earlier, bi?

Respondent : *aku tadi makan KFC* (I ate KFC earlier)

Mom : hmmm... his favorite

Papa : what's his friend's name?

Christop...

Respondent : *Christopher*

Mom : isn't that his friend at *happy holy kids*. Who are his friends, bi?

Respondents : *Gustav, Naomi, Joice, Manuel*.

**Table 6:** Work Analysis of Bilabial Development B and P

No	Utterances	Analysis	
		B	P
1.	Ha?	-	-
2.	Suka	-	-
3.	KFC	-	-
4.	Christopher	-	-
5.	Gustav, Naomi, Joice, Manuel.	-	-
	<b>Total</b>	<b>0</b>	<b>0</b>

### C. Overall Analysis of Recording 1-5

**Table 7:** Analysis of Bilabial Developmental Work B and P (Recoding 1-5)

No	Utterances	Analysis	
		B	P
1.	aku mau makan yang tadi	-	-
2.	ha?	-	-
3.	ga tau...	-	-
4.	Princess	-	-
5.	Princess	-	--
6.	Princess lego	-	-
7.	Yang mana? Ooo...sementar main ke rumah Responden 2,...eh, ini udah malam Elroy, Responden 2 juga udah ngantuk Elroy mau tidur.	-	-
8.	udah malam, terus Responden 2 juga udah mau tidur, udah	-	-
9.	ayo papa tau gak	-	-
10.	Enggak	-	-
11.	Ha?	-	-



No	Utterances	Analysis	
		B	P
12.		-	-
13.		-	-
14.	in nasi goreng...	-	-
		0	0

Based on the table above, information obtained from recording sources 1-5 can be analyzed. Respondent 2 does not omit the consonants b or p, in fact it can be said that Respondent 2 is very fluent in speaking and there is no indication of stuttering or omission of words.

This is in accordance with what was expressed by Vygotsky and Piaget that children will go through stages according to their sequence and will have different maturity than children who do not go through stages of their development (Diepeveen, *et al.*, 2022; Piquard-Kipffer, *et al.*, 2021). According to developmental standards, 4-year-old children are usually able to speak in better sentences and use many words. Understand and comprehend the similarities and differences of something. Understand the use of opposite words (for example: fat and thin, short and tall), can distinguish gender/sex, have a large collection of vocabulary that has been mastered. More confident and able to use words to express feelings and difficulties faced.

Respondent 2 has an environment that can help him learn language, that's why Respondent 2 is very fluent even before the age of four. This is also in accordance with what experts say that the most important aspect in language acquisition is the function of language, one of the functions of language is as a means of communication (Hormozi, 2022; Sihombing, 2022). Therefore, children who often use language to communicate will have higher competence and performance, in other words, the interaction factor will determine a person's success in mastering their language. In line with this, Chomsky said that children aged 3-4, in complete speech, the sentence structure is increasingly complex, such as sentences containing simple additional information also develop, children have also mastered transformations to form complex sentences (Al-Harbi, 2019; Amadi-Nna & Ngulube, 2024; Norvig, 2017). This factor also of course depends

on the stimuli given, especially from the family environment. Now the question arises why Respondent 1 and Respondent 2 look so different in their language skills? Does gender or sex affect? It turns out to be true, Michael Guriaan in his book *What Could He Be Thinking? How a Man's Mind Really Works* explains, the difference between male and female brains lies in the size of the parts of the brain, how those parts are connected and how they work. The basic differences between the two are (Gurian, 2003):

#### 1. Spatial differences

In males, the brain tends to develop and have more complex spatial abilities such as mechanical design abilities, measurement of abstraction direction, and manipulation of physical objects. It is no wonder that boys love to tinker with vehicles. Several additional studies have reported sex differences in young children in spatial tasks involving mental rotation. Kindergarten and first-grade boys performed better than girls in discriminating mirror reversals of triangles from identical triangles (Cronin, 1967), a task that may involve mental rotation. Four- and five-year-old boys performed better than girls in discriminating certain 2-D rotations of stimuli with salient external features of the foil, including a mirror reversal of the correct choice and another 2-D rotation (Cavanaugh, n.d.). Uttal, Gregg, and Chamberlain (1999) found that five-year-old boys were better at interpreting spatial maps than five-year-old girls, especially when the maps were rotated in relation to the space they represented (Vosmik, 2005). Although three-year-old girls performed better on average than three-year-old boys on the nonrotated map task—the only condition administered to this age group—Uttal, *et al.* reported that three-year-old boys appeared to be less engaged in the task than three-year-old girls. (Ivan, *et al.*, 2023; Levine, *et al.*, 1999)

#### 2. Verbal differences

Girls are thought to be better at verbal abilities, especially on verbal fluency and verbal memory tasks. However, the last meta-analysis on sex/gender differences in verbal fluency dates back to 1988 (Kimura & Harshman, 1984). Although verbal memory has recently been investigated meta-analytically, comprehensive meta-analyses focusing on verbal memory as it is typically assessed, for example, in neuropsychological settings are lacking. Studies have also found that girls outperform boys in phonemic fluency but not in semantic fluency; girls also outperform boys in recall and recognition (Hirnstein, *et al.*, 2023; Hyde, 1988; Kostina, *et al.*, 2022).

### 3. Chemical differences

Women's brains contain more serotonin, which makes them calm. It is not surprising that women are calmer when responding to physical threats, while men get angry more quickly (Brizendine, 2022). In addition, women's brains also have more oxytocin, a substance that bonds humans to other humans or objects (Russell & Baldwin, 2022). These two things affect the biological tendency of the male brain to not act first before speaking. This is different from women.

### 4. Smaller memory

The memory center (hippocampus) in the female brain is larger than in the male brain (Deary, 2020). This can answer the question of why men forget easily, while women can remember all the details (Rehbein, *et al.*, 2021). Broca (1861) stated that the ability to speak is centered on the left brain or the left hemisphere slightly forward. This part is known as Broca's area, which functions to control speech. There are four basic factors of speech, namely: an idea, a conventional relationship between ideas and words, how to combine articulation movements with words, and the use of articulation tools. If the front (anterior) part of the left hemisphere is injured or sick, humans will experience articulation or pronunciation disorders, for example, unclear speech, poor pronunciation, ungrammatical sentences, and speech is not fluent. Even so, sufferers of this disease are still able to express meaningful sentences according to their communication goals.

## CONCLUSION

It is undeniable that boys and girls will have different language development. Respondent 1 who is three years old, even though he is raised by his mother alone, still has difficulty communicating with others, his mother always repeats Respondent 1's unclear or unclear words,

so that Respondent 1 gets used to her pronunciation. Respondent 2 is very fluent in speaking, so this also proves that parenting and the number of people in the family can help Respondents communicate fluently considering that they are only four years old.

Environmental and cultural factors that ultimately shape women into 'talkative creatures' because it turns out that parents also play an important role. It is undeniable that parents play a big role in making women more active in speaking. When they are still children, conversation partners, especially mothers, usually speak longer to their daughters than when talking to their sons. So that the addition of vocabulary will occur more in girls.

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