

Phonological Development: Acquisition of Hausa Secondary Consonants Pronunciation by the Hausa Children

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Abstract:

Phonological development refers to the stages that children pass before they can correctly use and understand the sound system of their language. Inspired by Stampe's (1969) Natural Phonology Theory, this paper examines the acquisition of Hausa secondary consonants pronunciation by the Hausa children. The paper seeks to achieve the following objectives (a) to identify the phonological processes that are operating in the production of the Hausa secondary consonants by the Hausa 2-5 years children (b) to discover the units that are more affected if certain changes occur in the production of the Hausa secondary consonants (c) to explain whether a parental behavior influence the children's production of the Hausa secondary consonants. Four children aged between 2-5 years were purposely selected. The data were collected using a Pictorial Stimulus-Driven Elicitation. The study found that reduction, simplification, and substitution phonological processes operate in some of the children's speech production. It also revealed that regardless of the glottal stop, the second unit of the secondary consonants is more affected and that parental behavior affects children's speech production. The implication of this result is that it can be used by speech pathology to draw a conclusion about the Hausa children's phonological development.

Keywords: *Phonological development, Phonological processes, Secondary consonants*

1. Introduction

It is not uncommon that consonants with secondary articulation/cluster seem notable later than consonants with primary articulation in the children's speech production. Various phonological processes can be witnessed when children attempt to articulate secondary consonants or consonant clusters of their target languages. Researches on the Indo-European languages in this aspect are repeated from time to time. However, no abundant work has been done on Nigerian languages, especially Hausa language; a Chadic language spoken primarily in Northern Nigeria. Chadic is the biggest family of the Afro-Asiatic which is a collection of genetically associated languages determined in the northern part of Africa (Greenberg, 1963; Newman, 2000). Hausa language is to great extent and overwhelmingly spoken in Nigeria and Niger. Considerable numbers of Hausa groups were situated in Ghana, Chad, Benin, Cameroon etc. More than eighty to hundred million people can proclaim Hausa as their native language with somewhere in the range of a hundred and million speakers showing different conceptual ability in the language (Yusuf, 2011). The main aim of this research is to examine whether the Hausa children of 2-5 years can correctly pronounce the Hausa secondary consonants.

Phonological development as a process is a set of conceptual operation in human speech (Fagge, 2012). It refers to the processes and stages that children pass in order to attain the adults' competence in the production and comprehension of their target language. The children phonological development can be accessed in two ways: phonemic and phonetic acquisition (Dodd, et al, 2004). The phonemic analysis has to do with the phoneme production in the context of a word. It examines the children's achievement in the production of a sound within a given word (Chervela, 1981). The phonetic acquisition, on the other hand, focuses on the production of the individual sounds independent from any circumstantial use (Dodd et al, 2004). This research will exclusively focus on the phonemic analysis of the Hausa children's production of the Hausa secondary consonants.

A consonant sound from the phonetic point of view is a sound produced when the vocal track is narrowed or shut such that an audible friction is formed as the airflow is limited or totally blocked (Crystal, 2010). They are sounds such as /b/ /p/ /s/ /g/ /m/ /n/ etc. From the phonological point of view, the consonants are sounds that appear singly or in clusters within a margin (Crystal, 2010). A consonant cluster is the presence of more than one consonant in a word without the intercession of a vowel sound (Haruna, 2015). Examples of English consonant clusters include “*spr*” as in the word “*spring*”. The Hausa secondary consonants are presented in a form of clusters in the standard Hausa orthography.

1.2 Hausa Consonant Sounds

The Hausa language has a total of 32 consonant sounds (Greenberg, 1963). On the contrary, the great Hausa phonologist, Sani (2015) maintained that there are 34 consonant sounds in the Hausa language. The Hausa consonant sounds are basically divided into two: simple and secondary consonants. The simple consonants have a single intensity of pronunciation (Sani, 2015). They are 26 in number: ([b,] [‘b], [m],

[n], [ɲ], [ɳ], [t], [d], [dʰ], [l], [r], [s], [z], [ts], [rʰ], [sh], [c], [j], [y], [k], [kʰ], [g], [w], [h], [f], and [ʔ]). The language has three distinct [n] sounds as seen above. The secondary consonants have two intensity of pronunciation (Odden, 2005; Sani, 2015). Hausa language has eight and only eight consonants with secondary articulation (Sani, 2015). They are: [kw], [kj], [kʰw], [kʰj], [gw], [gj], [ʔj], [ɸj]. The Hausa secondary consonants are grouped into four classes (Sani, 2015) as follows:

- (1) The Palatalized Bilabial [ɸj]: Apart from its basic bilabial feature, the front of the tongue raised towards the hard palate; a feature called palatalisation (Sani, 2015).
- (2) The Labialized Velar [kw], [gw], and [kʰw], in their production, the back of the tongue and the soft palate make a contact; a feature called labialization. The sounds therefore become labialized velars (Sani, 2015).
- (3) [kj], [gj], and [kʰj], apart from their primary feature, the front of the tongue also raised towards the hard palate. They therefore became palatalized velars (Sani, 2015).
- (4) [ʔj], the front of the tongue here raised towards the hard palate and the glottal stop became palatalized (Sani, 2015).

1.3 Research Problem

The intent of this research is to examine whether the Hausa children of 2-5 years can correctly pronounce the Hausa secondary consonants occurring in the word-initial position. Researchers presumed that it is difficult for ordinary and speech impaired children to articulate their native languages' consonant clusters or secondary consonants (Hodson & Paden, 1981; Khan, 1982; Hodson, 1982; Crary, 1983; Garn-Nunn, 1986; Grunwell, 1987; Dodd & Iacano, 1989). The difficulties found by the children are mostly in the word-initial clusters (Chervela, 1981; Dodd, 1995; Watson and Scukanec, 1997; Mclead et al, 1994). For example, Watson and Scukanec, (1997) in their "*Phonological changes in the speech of two-year-olds: A longitudinal investigation*" announced more prominent use of word final clusters than the word-initial clusters by their participants. Due to the inadequate researches about the Hausa children's phonological development, this research will fill this gap by examining the Hausa children's production of the Hausa secondary consonants at the word-initial position. The selection of the word initial position is based on the assumption that if they can correctly pronounce the sounds at the word-initial position (the most difficult position) then probably they can also pronounce them at the word medial or final position.

1.4 Research Questions

This research will answer the following questions:

- (1) Which phonological processes are operating in the production of the Hausa secondary consonants by the Hausa 2-5 years children?
- (2) Which of the elements is more affected if certain changes occur in the children's pronunciation?
- (3) Does the parental behavior affect the children's production of the secondary consonants?

1.5 Research Objectives

The following are the research objectives:

- (1) To identify the phonological processes that are operating in the production of the Hausa secondary consonants by the Hausa 2-5 years children.
- (2) To discover the units that are more affected if certain changes occur in the production of the Hausa secondary consonants by the Hausa 2-5 years children.
- (3) To explain whether a parental behavior influence the children's production of the Hausa secondary consonants.

1.6 Significance of the Study

This research has a practical significance. Examining the production of the Hausa secondary consonants by the Hausa children is vital for speech pathology practice because it can help to determine whether or not the children's language acquisition is developing normally. It may also help in deciding on goals for intervention. The correct or incorrect pronunciation at a certain age may provide a hint of the acquisition processes.

1.7 Operational Definition

For this research, every concept or idea should be realized as explained below

Phonological Processes are natural processes that adjust or discard phonological units as the consequence of the characteristic restrictions and limits of human vocal organs (Dodd et al, 2004). These processes include but not limited to the following: reduction, simplification, epenthesis, metathesis, coalescences and homonymy.

Deletion is the reduction of one or more element from the secondary consonant so that only one element is been pronounced (Fagge, 2012).

Simplification refers to the non-adult like pronunciation of one or both elements within the secondary consonants (McLeod et al, 1994).

Homonymy, McLeod, et al, (1994:6) defined homonymy as a process when "phonological contrasts are neutralized and the resulting production of a particular word is not audibly different from another word".

Metathesis refers to the rearrangement of the segments in the secondary consonants

Parental Behavior refers to whether the parent often speak Hausa to the children or their educational level makes them to prepare speaking English than Hausa to the children

2. Literature Review

Relevant and related literature to the research topic will briefly be reviewed.

Chervela (1981) examined the acquisition of consonant clusters by four Telegu children of 1;6-3;0 years of age. It is a longitudinal and cross-sectional research. The data were collected through a control elicitation and free observation task. The analysis shows that deletion, assimilation, and substitution processes operate in the children's production of the consonant clusters. Dodd et al (2004) in their *"Phonological development: a nominative study of British English-speaking*

children” examined the age of sound acquisition and error free of 648 children. They also examined the influence of socio-economic status and gender on speech production. The result shows that few errors were found in the speeches of the older children. It also shows that gender and socio-economic status does not influence the children’s speech production. Robert et al (1990) examined the phonological processes in the speech of 145 children of 2;5-8 year. The data were collected through the standardized articulation test. The result shows that cluster reduction, deletion and other phonological processes operate in the speeches of the 2;0-4;0 year children. It also shows that only cluster reduction is found in their speeches after 4years. Vihman (2017) examined the prosodic structure and templates of five bilingual children’s phonological development. The result shows that the children’s prosodic structure may or may not be distinguished by the language. On the contrary, the developed phonological templates are not at all. However, none of these researches say anything about the acquisition of Hausa secondary consonants by the Hausa children.

3. Methodology

In this section, the sample of the study, method of data collection and theoretical framework of the research will be discussed.

3.1 Sampling

Using a purposive sampling technique, four Hausa children were selected for this research. The purposive sampling technique is a deliberate technique of selecting participants that possessed the qualities needed for a particular research (Etikan et al, 2016). The children and their parents are presently living in Maybank student hostel in the Universiti Utara Malaysia, Sintok campus. The age of the children is between 2-5 years. The main motive behind selecting the children with this character is because they will have a better capacity to help with the pertinent research.

3.2 Method of Data Collection

With the help of the children’s parent, a “*Pictorial Stimulus Driven Elicitation*” is used to collect the data. The Pictorial Stimulus Driven Elicitation involves the utilization of pictures, video-cuts, drawing illustration etc. (Shobbana and De Reuse, 2001). In this technique, a researcher will present pictures, video clips or drawings and ask the participants to comment or remark on them. In this research, the researcher provides a print picture of some objects that their names contain one of the Hausa secondary consonants (see appendix). The parents help the researcher and ask the children to say the names of the individual objects; one of the parent will point at a particular picture and said “*mene wannan*” meaning *what is this?* In cases where the child doesn’t know the name of the object, the researcher or one of the parent will say the name and ask the child to repeat after him. A phone recording and an instant speech observation are used by the researcher.

Prior to the elicitation task, the researcher bought some biscuits and sweets for the children. The task begins after the child feels over the moon with the sweet or a biscuit.

3.3 Theoretical Framework

In this research, the Natural Phonology Theory originated by Stampe (1969) is adopted as the main framework. Central to this theory is the assumption that children's speech production is ruled by an oversized variety of natural phonetic errors (Stampe, 1969). The errors are termed as *phonological processes*; a concept we defined in the introductory section. Through a qualitative descriptive research design, the researcher will examine the Hausa children's speeches with the aim of finding the phonological processes that are operating in their attempt to pronounce the Hausa secondary consonants.

The qualitative descriptive research will be used in the analysis as the researcher will provide a straightforward description of the data.

4. Data Analysis

Having introduced the theoretical framework in the previous section, we now move on to data presentation and analysis. An asterisk (*) will be used to indicate that a particular feature is missing at a particular spot.

Each data will be tabulated separately.

(1) Table representing the results of participant A

Age: 4 year

Gender: Male

Target word	Gloss	Child Form	Phonological process
Kwakwa	Coconut	Kwakwa	Adult-like
Kyankyaso	Cockroach	Kyankyaso	Adult-like
'kwaya	Drug	*Kwaya	Reduction
'Kyaure	Door	*Kyaure	Reduction
Gyad'a	Peanut	Gyad'a	Adult-like
Gwanda	Papaya	Gwanda	Adult-like
Fyad'e	Rape	F*aid'e	Substitution
'ya 'ya	Children	*ya *ya	Reduction

From the above table, we can observe that the participant is able to correctly pronounce the *kw*, *ky*, *gy*, and *gw* sounds. However, it also indicates that the participants faced difficulty in the production of the Hausa glottal stop attached to the words *'kyure*, *'ya 'ya* and *'kwaya*. This means that he is unable to correctly pronounce the *'ky*, *'kw* and the *'ya* sounds. Moreover, the participant is also unable to correctly pronounce the *fy* sound. The "y" in the word *fyad'e* is deleted and substituted by the diphthong "ai". Based on the analysis, two morphological processes are found to be in operation in this participants' production of the Hausa secondary consonant: reduction and substitution.

(2) Table representing the results of participant B

Age: 5 year

Gender: Female

Target word	Gloss	Child Form	Phonological process
Kwakwa	Coconut	Kwakwa	Adult-like
Kyankyaso	Cockroach	Kyankyaso	Adult-like
‘kwaya	Drug	‘Kwaya	Adult-like
‘Kyaure	Door	‘Kyaure	Adult-like
Gyad’a	Peanut	Gyad’a	Adult-like
Gwanda	Papaya	Gwanda	Adult-like
Fyad’e	Rape	F*aid’e	Substitution
‘ya ‘ya	Children	‘ya ‘ya	Adult-like

From the above table, we can observe that participant B who is five years of age is able to correctly pronounce all the Hausa secondary consonants except “fy” in the word “fyad’e”. One important issue to consider here is that the same phonological process of participant A is utilized by participant B in the production of the “fy” sound. The “y” that palatalized the sound is substituted by the diphthong “ai”. This means that all the features of the Hausa secondary consonants were available in her speech production except the palatalized bilabial.

(3) Table representing the results of participant C

Age: 2 year

Gender: Female

Target word	Gloss	Child Form	Phonological process
Kwakwa	Coconut	K*aka	Reduction
Kyankyaso	Cockroach	Kyankyaco	Adult-like
‘kwaya	Drug	*K*aya	Reduction
‘Kyaure	Door	*Kyaure	Reduction
Gyad’a	Peanut	Gyad’a	Adult-like
Gwanda	Papaya	G*anda	Reduction
Fyad’e	Rape	F*ade	Reduction
‘ya ‘ya	Children	*ya *ya	Reduction

From the above table, we can observe that the participant is able to correctly produce only two Hausa secondary consonants: “gy” and “ky”. In all the other sounds, a reduction phonological process is said to affect their production. The feature of the glottal stop is not available in her speech production. She is able to correctly pronounce the palatalized velar consonants except in “fy” sound. The features of palatalized bilabial and labialized velars were totally missing in her production. This means that reduction as a phonological process hindered her production.

(4) Table representing the results of participant D

Age: 3 year

Gender: Female

Target word	Gloss	Child Form	Phonological process
Kwakwa	Coconut	k*aka	Reduction/simplification
Kyankyaso	Cockroach	k*aso	Reduction/simplification
'kwaya	Drug	*k*aya	Reduction/simplification
'Kyaure	Door	*K*aur	Reduction/simplification
Gyad'a	Peanut	G*eda	Reduction/simplification
Gwanda	Papaya	G*ande	Reduction/simplification
Fyad'e	Rape	F*ad	Reduction/simplification
'ya 'ya	Children	*a *a	Reduction/simplification

Participants D can't pronounce a single sound correctly. As observed by the researcher, this has to do with the parental behavior. The parents are not speaking Hausa language to her at all. On the spot of collecting the data, when the father notices that the child is unable to pronounce a single sound correctly, he says "*akwai matsala*" a Hausa expression which means "*there is a problem*". The participant is applying two phonological processes at the same time. She first reduced the consonant clusters and then simplified the reduced form as well.

5. Findings and Discussion

The research findings will be discussed based on the research questions. In response to question one, the analysis shows that three phonological processes are pervasive in the participants' speech production, namely: reduction, simplification and substitution. The reduction is the most frequent process that occurs as the child delete one or more feature of the target secondary consonant. For example, in the speech production of participant A, all the Hausa glottal stops were deleted from their respective words. So also in the speeches of participants C and D. This means that the glottal stop is not available in the speech production of 2, 3, and 4 years Hausa children. Studies conducted by McLeod (1999) and Watson and Scukanec (1997) also reported that reduction is the most occurring phonological feature in the speeches of their participants. In response to the second research question, the analysis shows that the second sound is more affected when certain changes occur in the speech production of the children. For example, in the substitution process of participant A and B, it is the second phonological feature "y" that is affected. So also in reduction processes, the feature "w" in the words "*kwakwa*" and "*'kwaya*" was deleted in the speeches of participant C. This means that the initial sound, regardless of the appearance of a glottal stop is less affected if certain phonological changes occur. In response to the final research question, the analysis shows that indeed parental behavior affects the children's speech production as participant D is unable to correctly pronounce a single Hausa secondary consonant. This means that children surely need comprehensible input for their language development. The Hausa secondary consonants were not comprehensibly presented to participant C

and thus making it difficult for him to pronounce them. This is can also be confirmed in this because none of the children is able to correctly pronounce the Hausa word “*fyade*” meaning rape. Such words are counted as taboo and they are not commonly used in the Hausa ordinary speeches. The implication of the findings is that it can be used by a speech pathologist to draw conclusions about the phonological development of Hausa children of 2-5 years.

6. Conclusion

Inspired by the Stampe’s (1969) Natural Phonology Theory, this research examined the phonological processes that operate in the production of Hausa secondary consonants by the Hausa children of 2-5 years. The reduction, simplification, and substitution are found in the children’s speech production. In some cases, the feature of the glottal stop seems not to be available in some of the children’s speeches. Parental behavior also affects children’s speech production. This means that speaking the language to the child will facilitate his phonological development.

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