

## **Bilingual Acquisition and Phonological Interaction: Evidence from the Acquisition of Pronunciation by Yorùbá-English Bilingual Children**

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### **Abstract**

*The typical knowledge of phonological development in bilingual children is limited compared to their monolingual peers; this is due to the interaction between the two linguistic systems in their language faculty. This linguistic interaction accounted for with three hypotheses: deceleration, acceleration and transfer (Paradis and Genesee 1996), is believed to be responsible for their complex phonological outputs. This study examined the acquisition of some Yorùbá names and consonant clusters in English with focus on their pronunciation. With two sets of data collected at an interval of five years at different ages from ten Yorùbá-English bilingual children, findings revealed that all the subjects had problems with most of the Yorùbá names and all the target English words at the first instance. The second set of data revealed conflicting results. While all the subjects pronounced the target Yorùbá names correctly, half of them still mispronounced the target English words. This study revealed that since language learning/acquisition is individually conditioned, age and linguistic interaction potentially affect the phonological outputs of bilingual children, especially in the L2.*

**Keywords:** Bilingual acquisition, interaction, age, Yorùbá names, consonant clusters

### **Introduction**

There is always a significant difference between the level of attainment in L1 and L2 acquisition Tohidian, (2009). While children normally achieve complete mastery of their L1, L2 learners (mostly adults) rarely achieve such mastery. This significant difference between L1 and L2 attainment has been attributed to several factors. One such factor is age which has received a lot of attention (Tohidian 2009). However, the case for bilingual children has been examined from other perspectives particularly concerning phonology. Scobbie *et al* (1995) observed that phonological categories are not universal and each child must learn which particular acoustic cues contrast in his or her language. In the case of bilingual acquisition, such children face double variability because of the two sets of linguistic structures they have to choose from due to inputs from two languages. In accessing and forming

phonological categories according to Kohnert, (2008), bilingual children face a particular difficulty for two clear reasons. One, their exposure to each language (i.e. input) is always lesser than their monolingual peers. Two, due to structural differences in the two languages, they experience more variability in input.

According to Kohnert (2012), because a child's two languages are interactive in nature, bilingualism can lead to competition for cognitive resources. The amount of input received by a bilingual in a language has been identified as vital in describing both children and adult bilinguals. Based on this, the age of exposure to a second language, the amount of exposure and the use a child exhibits are typically defined. There are different types of bilinguals. However, this work focuses on simultaneous bilinguals who Patterson (2002) defines as bilinguals who are exposed to two languages during their infancy and early childhood.

It is established that by the age of 2, bilingual children have separate linguistic systems (Keshavarz & Ingram, 2002). It is also widely accepted that the two systems interact. However, according to Paradis & Genesee (1996), their extent of interaction still remains unclear. Paradis and Genesee (1996) proposed three hypotheses to account for the interaction between languages about how bilingual children acquire their two linguistic systems. They are Deceleration, Acceleration, and Transfer. The deceleration hypothesis (tagged delay in Paradis & Genesee 1996) predicts that bilingual children at times, tend to exhibit a slower rate of acquisition of a particular linguistic feature in comparison to their monolingual peers. Acceleration hypothesis opines that bilingual children have the tendency, at times, to exhibit a faster rate of acquisition in comparison to their monolingual peers.

Unlike the first two hypotheses which focus on the rate of acquisition between bilingual and monolingual children, the transfer hypothesis expresses a different view on interaction. According to Fabiano & Goldstein (2005), transfer refers to the occurrence of sounds or sound patterns specific to a language in the other language context (such transfer is tagged a cross-linguistic effect when it occurs in a bi-directional manner), and is evidence of interaction between the two languages of bilinguals.

For bilingual children acquisition, the overall interactive patterns of disparity in the phonological outputs in both languages have been examined with conflicting results. This study attempts to investigate the effects of linguistic structures interaction among a group of Yorùbá-English bilingual children with a focus on the pronunciation of some specific words to determine the effects of such interaction on the phonological outputs in both languages.

### **The Status of Yorùbá and English Languages in Nigeria**

According to Lewis (Ethnologue 2009), Yorùbá is one of the three major indigenous languages spoken in Nigeria specifically in the six states of Lagos, Ògùn, Ondo, Òyó, Òşun and Èkìtì which make up the South-western part of Nigeria. Yorùbá is also spoken natively in some parts of Kwara and Kogi states in the North-Central geopolitical zone. English on the other hand, is the official language in Nigeria. It is the major language used in education. It also serves as the unifying language for speakers of the diverse languages spoken in Nigeria. As observed by Mustapha (2012), some Yorùbá children get exposed to English and Yorùbá simultaneously from infancy which automatically makes them Yorùbá-English bilinguals.

### **Phonological Patterns of English and Yorùbá**

Oyebade (2008) defines phonology as the branch of linguistics which studies the sound pattern of a language. Sound pattern refers to the permissible combination of sounds in terms of sequence, a concept that differs among languages. For example, English allows the sequence of consonants which is known in linguistics literature as consonant clusters. Such clusters can occur in a word initially, medially and finally. Examples are underlined in the following words: glimpse, scrape, cleft, subtle, English, etc. However, Yorùbá does not allow consonant clusters as well as consonant final words. Yorùbá in two cases combines two letters to form a single sound e.g. [gb] in gbogbo ‘all’ and [kp] which is usually written as ‘p’ orthographically. For example, pa ‘kill’ is pronounced as /kpa/. Also, the bilabial nasal ‘m’ and the velar nasal ‘n’ may precede a consonant e.g. rántí ‘remember’ and òrómó ‘orange’. In the first example, the vowel ‘a’ which precedes the velar nasal ‘n’ is a nasalized vowel. Thus, it would be pronounced as [rántí]. Also, the bilabial nasal /m/ in orómó is a distinct syllable that bears tones. This is important because only vowels bear tones in Yorùbá. However, [n and m] are syllabic nasals in the language. The decision to examine names and consonant clusters in Yorùbá and English respectively is because names are culturally significant in Yorùbá and children are usually familiar with names from childhood. Consonant clusters as a concept are absent in Yorùbá but present in English, and it is one of the most common phonological concepts which can be tested for young learners under phonology.

### **Previous studies on Bilingual acquisition among Children**

Several studies have examined the acquisition of phonology among bilingual children. For example, Munro et al (2005) examined 83 Welsh–English speaking bilingual children and found that some patterns of phonological error observed in Welsh did not occur in English. Gildersleeve-Neumann et al (2008) working with a focus on 3-year old bilingual children's English skills found evidence for slower acquisition of English phonology by typically developing Spanish-English bilingual children. Specifically, the bilingual children showed a general lower intelligibility rating, made more overall consonant and vowel errors, and produced rarer error patterns than their monolingual English-speaking peers.

Also, Fabiano-Smith and Goldstein (2010a) examined 8 bilingual Spanish-English speaking children, ages 3-4 on overall consonant accuracy and accuracy by manner class. They were compared to their monolingual peers to determine if the rate of phonological acquisition in bilinguals occurs at a faster or slower rate than monolinguals in phonological acquisition. It was discovered that bilingual children exhibited evidence of a slower rate of acquisition on overall consonant accuracy in Spanish when compared to Spanish monolinguals (i.e., deceleration), but this was not so for English. Based on manner class, bilingual children showed a slower rate of acquisition in Spanish on only a few manner classes (trill, fricatives, and glides), but showed comparable accuracy with monolinguals on all other sound classes. Also, Fabiano-Smith and Goldstein (2010b) found that 3-year old bilingual Spanish-English children were significantly more accurate in their productions of similar speech sounds between English and Spanish than those sounds that occurred only in one language.

Facts from previous studies suggest that bilingual children might actually be using one language to aid the acquisition of the other which allows for commensurate accuracy on most manner classes (in two languages) in the same amount of time as monolinguals acquiring only one language. Thus, according to Gawlitzek-Maiwald & Tracy (1996), interaction may cause a slower rate of development on the production of some phonological skills (i.e., accuracy) and simultaneously cause a variation of acceleration, or bootstrapping of other phonological skills.

Isaiah (2017) examined the acquisition of Yorùbá and English consonants using Optimality Theory and a comparative approach. Her focus was on the occurrence and differences in the use of consonants in child and adult speech forms in Yorùbá and English with particular focus on children language. Using three Yorùbá-English bilingual subjects, she identified different patterns of outputs through phonological processes. Her findings are presented below:

The following phonological processes were identified in Yorùbá:

**a. Consonant insertion**

A consonant is introduced at the initial position of the target word.

|     | <b>Adult</b> | <b>Child</b> | <b>Gloss</b> |
|-----|--------------|--------------|--------------|
| i.  | /èta/        | [dèta]       | ‘three’      |
| ii. | /àrú/        | [dàrú]       | ‘five’       |

**b. Consonant deletion**

This is the omission of either the initial consonant or an intervocalic consonant is deleted in the target word e.g. [j] and [m]:

|     | <b>Adult</b> | <b>Child</b> | <b>Gloss</b> |
|-----|--------------|--------------|--------------|
| i.  | /ajòmídé/    | [aàmídé]     | ‘a name’     |
| ii. | /túmíké/     | [túké]       | ‘a name’     |

**c. Substitution**

There are three patterns under this process:

- (i). **Stopping**: a fricative is replaced by a stop in a word e.g. [b] and [t]:

|   | <b>Adult</b> | <b>Child</b> | <b>Gloss</b> |
|---|--------------|--------------|--------------|
| a.  | /ɛfà/        | [ɛbá]        | ‘six         |
| b.  | /Bósɛ̃/      | [Tótɛ̃]      | ‘a name’     |
| c. (ii). <b>Gliding</b> : a liquid is replaced by a glide e.g. [j]: |              |              |              |
| a.  | /olè/        | [ojè]        |              |
| b.  | /kpèlɛ́/     | [kpɛ́jɛ́]    |              |

(iii) **Deaffrication**: the continuant (fricative) component of the voiced affricate is deleted leaving only the stop e.g. [d] or [t]:

|    | <b>Adult</b> | <b>Child</b>   | <b>Gloss</b> |
|----|--------------|----------------|--------------|
| a. | /odʒú/       | [odú], [otú]   | ‘eye’        |
| b. | /ó dʒe/      | [ó dɛ], [ó tɛ] | ‘he ate’     |

#### d. Assimilation process

There are two patterns under this process:

(i). **Consonant Harmony**: a target word consonant takes on the features of another contiguous consonant, even across intervening vowels e.g. [k] and [gb]:

|    | <b>Adult</b> | <b>Child</b> | <b>Gloss</b> |
|----|--------------|--------------|--------------|
| a. | /bàtà/       | [tàtà]       | ‘shoe’       |
| b. | /kò gbóná/   | [gbò gbóná]  | ‘not hot’    |

(ii). **Devoicing**: the voiced quality of a consonant in a target word is reduced e.g. [k]:

|    | <b>Adult</b> | <b>Child</b> | <b>Gloss</b>   |
|----|--------------|--------------|----------------|
| a. | /gàrí/       | [kàrí]       | ‘cassava meal’ |
| b. | /bàbá/       | [pàpá]       | ‘grandpa’      |

The following phonological processes were identified in English:

a. **Final Consonant deletion**: this involves the deletion of the final consonant:

|     | <b>Adult</b> | <b>Child</b> | <b>Gloss</b> |
|-----|--------------|--------------|--------------|
| i.  | /teɪk/       | [teɪ]        | ‘take’       |
| ii. | /bɪg/        | [bɪ]         | ‘big’        |

b. **Cluster reduction**: Deletion of one or more consonants from a two or three consonant cluster.

|     | <b>Adult</b> | <b>Child</b> | <b>Gloss</b> |
|-----|--------------|--------------|--------------|
| i.  | /kraun/      | [kaun]       | ‘crown’      |
| ii. | /spu:n/      | [pu:n]       | ‘spoon’      |

c. **Substitution processes**

Four patterns were identified:

(i). **Stopping**:

|    | <b>Adult</b> | <b>Child</b> | <b>Gloss</b> |
|----|--------------|--------------|--------------|
| a. | /seɪ/        | [teɪ]        | ‘say’        |
| b. | /seɪl/       | [seɪl]       | ‘sail’       |

(ii). **Fronting**:

|    |         |         |          |
|----|---------|---------|----------|
| a. | /brɛst/ | [blest] | ‘breast’ |
| b. | /prɛs/  | [plɛs]  | ‘press’  |

(iii). **Gliding**:

- |                             |         |         |          |
|-----------------------------|---------|---------|----------|
| a.                          | /rabit/ | [wabit] | ‘rabbit’ |
| b.                          | /rei/   | [weil]  | ‘rail’   |
| (iv). <b>Deaffrication:</b> |         |         |          |
| a.                          | /tʃi:z/ | [ʃi:z]  | ‘cheese’ |
| b.                          | /dʒa:r/ | [ʒa:r]  | ‘jar’    |

**d. Assimilation processes**

Two patterns were identified:

- |       |                           |              |              |
|-------|---------------------------|--------------|--------------|
| (i).  | <b>Consonant harmony:</b> |              |              |
|       | <b>Adult</b>              | <b>Child</b> | <b>Gloss</b> |
| a.    | /dʌk/                     | [gʌk]        | ‘duck’       |
| b.    | /ənʌðə/                   | [ənənə]      | ‘another’    |
| (ii). | <b>Devoicing:</b>         |              |              |
| a.    | /laivz/                   | [lafz]       | ‘lives’      |
| b.    | /bag/                     | [bak]        | ‘bag’        |

No study has examined the simultaneous acquisition of Yorùbá and English sounds by Yorùbá-English bilingual children at two different stages of acquisition with a focus on Yorùbá names and consonant clusters using the phonological interaction model. This work aims to fill this vital gap.

**1. The subjects**

Ten participants, 5 boys and 5 girls took part in this study. During the first instance of data collection, they were nursery school students who were taught basically in English. Their parents were Yorùbá native speakers who use English as L2. Thus, they were all exposed to both Yorùbá and English from childhood. The parents affirmed that Yorùbá and English were used interchangeably at home but English was used more often than Yorùbá. From available information, the subjects were simultaneous Yorùbá-English bilinguals exposed to both languages from infancy. Yorùbá was confirmed as their L1. They were three years old at the first instance of data collection but they had become 8 years old during the second instance. In both instances, according to Bley-Vroman (1990), they were children still within the critical period of language acquisition i.e. below age 12 as claimed by the Critical Period Hypothesis.

**2. Data collection and methodology**

The task of determining the phonological competence of the subjects was approached through oral production tasks only and the same method was adopted in both instances. Unlike Isaiah (2017) who approached the task with a focus on phonological processes in both languages, this study focused on some common Yorùbá names and some English words with consonant clusters. The target words in both languages were pronounced and the subjects were instructed to repeat what was pronounced. In some cases, for the English words, the object, either physically or through a picture were shown to the subjects which they pronounced. Data collection for the Yorùbá words was easier because all the target words were familiar names to all the subjects. At least a pupil in their class bore one of the target names. All the researcher did was to point at the bearer of such a name and the

subject would pronounce the name of the pupil. The tasks were administered by the researcher with the help of the participants' teachers in their school. The sessions were recorded and later analyzed for correct and incorrect pronunciation. However, the second round of data collection was easier because the subjects had moved to primary school and were more composed and attentive than they were during the first round of data collection five years back.

### 3. Results

The results of two sets of data collected at two different stages and ages of acquisition would be presented with a focus on the level of proficiency exhibited in the target words in Yorùbá and English. The first one would report the results of the first set of data collected in the first instance while the second one would present the results of the second set of data. The focus would be on the differences in the pronunciation of the target words in both instances. The results would be compared to identify the differences between them in both instances. It is important to clarify that the main focus on the English data is the subjects' ability to pronounce English consonants in sequence and not the correct Received Pronunciation form of the word. This is because the structure of Nigerian English is a factor that tends to affect the overall pronunciation of English words by Nigerian English speakers (Akinjobi 2015 and Okoro 2017).

#### 3.1. Results for the first sets of Data

The results would be presented under two sub-headings. The first one would present those for the Yorùbá data while the second one would present those for the English data.

##### 3.1.1. *The First set of Yorùbá data*

The first set of Yorùbá data is presented below. Please note that the forms under 'the subjects' output' were those produced by the ten subjects except where it is explicitly stated otherwise.

| Subjects' output                     | Native Yorùbá Adult output | Gloss   |
|--------------------------------------|----------------------------|---------|
| 1. a. [Binmi, Minmi]<br>'Bùnmi'      | b. /Bùnmi/                 |         |
| 2. a. [Tínnṭé, Tínníté]<br>'Túnmiké' | b. /Túnmiké/               |         |
| 3. a. [Tojúté]<br>'Folúké'           | b. /Folúké/                |         |
| 4. a. [ʃɔjá]                         | b. /ʃólá/                  | 'Solá'  |
| 5. a. [Títé]                         | b. /Kíké/                  | 'Kíké'  |
| 6. a. [Títé]                         | b. /ḍjídé/                 | 'Jidé'  |
| 7. a. [Bójá]                         | b. /Bólá/                  | 'Bólá'  |
| 8. a. [Tójá]                         | b. /Tólá/                  | 'Tólá'  |
| 9. a. [Bójú]                         | b. /Bólú/                  | 'Bólú'  |
| 10. a. [Jáñje]                       | b. /Láñre/                 | 'Láñre' |
| 11. a. [Tínté]                       | b. /Fúnké/                 | 'Fúnké' |

|                               |              |          |
|-------------------------------|--------------|----------|
| 12. a. [Tèti]                 | b. /Dèd̥ʒi/  | ‘Dèji’   |
| 13. a. [Bánté, Tánté]         | b. /Bánké/   | ‘Bánké’  |
| 14. a. [Tínjé]                | b. /Kúnlé/   | ‘Kúnlé’  |
| 15. a. [ʃaté]                 | b. /ʃadé/    | ‘Şadé’   |
| 16. a. [Wɔ́jé]                | b. /Wɔ́lé/   | ‘Wólé’   |
| 17. a. [Téjànmi]<br>‘Fèrànmi’ | a. /Fèrànmi/ |          |
| 18. a. [Ìjábò]                | b. /Ìjábò/   | ‘Ìyábò’  |
| 19. a. [Ajéjémí]<br>‘Ayéyemí’ | b. /Ajéjémí/ |          |
| 20. a. [Bíʃi]                 | b. /Bísí/    | ‘Bísí’   |
| 21. a. [Bíʃójá]               | b. /Bísólá/  | ‘Bísólá’ |
| 22. a. [Tínté]                | b. /Túndé/   | ‘Túndé’  |

In 1-22, a comparison of the forms under subjects’ output with those of adults’ native Yorùbá forms revealed some things. One, all the subjects correctly assigned tone to all the names. Two, there was a consistent pattern of sound substitution in the subjects’ outputs. For example, in 1a, two forms were produced. In the first one, [b] was substituted for [m] and the next vowel [u] was substituted for [i] while in the second one, [b] was retained but the next vowel [u] was also substituted for [i]. This same process i.e. replacing [u] with [i] also occurred in 2a, 11a, 14a and 22a. It is noteworthy that three of the subjects produced the different forms in 1a, 2a, and 13a i.e. /Minmi/, /Tínté/ and /Tánté/ respectively. Also, [l] was replaced with [j] as shown in 3a, 4a, 7a, 8a, 9a, 10a, 14a, 16a and 17a. In examples 3a, 11a and 17a, [f] was replaced with [t]. Furthermore, [k] was replaced with [t] in 3a, 5a, 11a, 13a and 14a. Also, [dʒ] and [d] were replaced with [t] in 6a, 12a, 15a and 22a. Also, [s] was replaced with [ʃ] in 20a and 21a. In 2a and 13a, two forms were produced by the three subjects who produced the different forms in 1a. In 2a, [m] was replaced with [n] while in 13a, [b] was replaced with [t]. Furthermore, [j], [t] and [ʃ] remained unchanged in all instances as shown in 2a, 4a, 8a, 15a, 18a and 19a.

### 3.1.2. *The First set of English Data*

The first set of English data collected on consonant cluster is presented below. The forms under ‘subjects’ output’ were those produced by the ten subjects except where shown otherwise.

| <b>Word</b>  | <b>Subjects’ output</b> | <b>Correct pronunciation</b> |
|--------------|-------------------------|------------------------------|
| 23. biscuit  | [bititi], [kikiti]      | /bɪskɪt/                     |
| 24. laptop   | [jatɔp]                 | /læptɔp/                     |
| 25. passport | [pæpɔ:ti]               | /pa:spɔ:t/                   |
| 26. bread    | [beti]                  | /brɛd/                       |
| 27. brandy   | [banti]                 | /brændi/                     |
| 28. correct  | [təjet], [kəjet]        | /kɔrɛkt/                     |
| 29. walnut   | [wɔnut]                 | /wɔ:lnʌt/                    |
| 30. cognate  | [tɔnɛt], [kɔnɛt]        | /kɔgnɛt/                     |
| 31. tadpole  | [tæpɔj]                 | /tædpəʊl/                    |



|                  |                                |               |
|------------------|--------------------------------|---------------|
| 32. pistol       | [pɪtl]                         | /pɪstl/       |
| 33. ingredient   | [ɪngri:tɪənt]                  | /ɪngri:diənt/ |
| 34. melt         | [mɛti]                         | /mɛlt/        |
| 35. kleptomaniac | [kʰɛtəmɛiniæt], [kʰɛtəmɛiniæk] |               |
| 36. mascara      | [mætsɑ:jə]                     | /mæskɑ:rə/    |
| 37. world        | [wɔ:t]                         | /wɔ:ld/       |
| 38. reptile      | [rɛptajl]                      | /rɛptail/     |
| 39. belt         | [bɛɪti]                        | /bɛlt/        |
| 40. infection    | [ɪnfɛʃn]                       | /ɪnfɛkʃn/     |
| 41. selection    | [sɪjɛʃn]                       | /sɪlɛkʃ(ə)n/  |
| 42. section      | [sɛʃn]                         | /sɛkʃən/      |

The examples in 23-42 under subjects' output revealed some facts. All the subjects omitted the second consonant in 26, 27 and 33 but omitted the first consonant in the remaining examples. Also, there were cases of substitution of sounds similar to the pattern in the Yorùbá data e.g. [l] and [r] for [j] in 28, 31, 33, 35, 36 and 38, [d] for [t] in 26, 27, 33 and 37, and [s] for [ʃ] in 41 and 42 just like in the Yorùbá data. Apart from 23, 28, 30 and 35 where two forms were produced, all the subjects exhibited similar knowledge in terms of proficiency. Interestingly, the different forms /kíkítí/, /kájɛt/, /kɔnɛɪt/ and /kʰɛtəmɛiniæk/ were produced by the three subjects who produced the different forms in the Yorùbá data.

### 3.2. The Second set of Data

Just like in 7.1., the results here would be presented under two sub-headings. The first one would present those for the Yorùbá data while the second one would present those for the English data.

#### 3.2.1. The Second set of Yorùbá Data

The second set of Yoruba data which were the same as those in the first set of data are presented below. The forms under 'subjects' output were those produced by the ten subjects.

| Subjects' Output | Native Yorùbá Adult Output | Gloss     |
|------------------|----------------------------|-----------|
| 43. [Bùnmi]      | /Bùnmi/                    | 'Bùnmi'   |
| 44. [Túnmiké]    | /Túnmiké/                  | 'Túnmiké' |
| 45. [Fólúké]     | /Fólúké/                   | 'Fólúké'  |
| 46. [ʃɔlá]       | /ʃɔlá/                     | 'Ṣolá'    |
| 47. [Kíké]       | /Kíké/                     | 'kíké'    |
| 48. [dʒídé]      | /dʒídé/                    | 'Jídé'    |
| 49. [Bólá]       | /Bólá/                     | 'Bólá'    |
| 50. [Tólá]       | /Tólá/                     | 'Tólá'    |
| 51. [Bólú]       | /Bólú/                     | 'Bólú'    |
| 52. [Láńre]      | /Láńre/                    | 'Láńre'   |
| 53. [Fúnké]      | /Fúnké/                    | 'Fúnké'   |
| 54. [Dèdʒi]      | /Dèdʒi/                    | 'Dèjì'    |

|               |           |           |
|---------------|-----------|-----------|
| 55. [Bánké]   | /Bánké/   | ‘Bánké’   |
| 56. [Kúnlé]   | /Kúnlé/   | ‘Kúnlé’   |
| 57. [ʃadé]    | /ʃadé/    | ‘ʃadé’    |
| 58. [Wólé]    | /Wólé/    | ‘Wólé’    |
| 59. [Férànmi] | /Férànmi/ | ‘Férànmi’ |
| 60. [Ìjábò]   | /Ìjábò/   | ‘Ìyábò’   |
| 61. [Ajéjemi] | /Ajéjemi/ | ‘Ayéyemi’ |
| 62. [Bísí]    | /Bísí/    | ‘Bísí’    |
| 63. [Bísólá]  | /Bísólá/  | ‘Bísólá’  |
| 64. [Túndé]   | /Túndé/   | ‘Túndé’   |

As shown in examples 43-64, all the subjects produced the exact forms normally produced by adult native speakers of Yorùbá. Unlike the case in the first round of data collection, there was no single case of mispronunciation of any name by all the subjects.

### 3.2.2. *The Second set of English Data*

The second set of English data collected which a focus on the same set of words with consonant clusters is presented here. The forms under ‘subjects’ output’ were produced by the ten subjects except where it is explicitly stated and shown otherwise.

| Word                                | Subjects’ output              | Correct pronunciation |
|-------------------------------------|-------------------------------|-----------------------|
| 65. biscuit                         | [bɪskɪt]                      | /bɪskɪt/              |
| 66. laptop                          | [laptɒp]                      | /laptɒp/              |
| 67. passport                        | [pa:spɔ:t]                    | /pa:spɔ:t/            |
| 68. bread                           | [brɛd]                        | /brɛd/                |
| 69. brandy                          | [brændi]                      | /brændi/              |
| 70. collect                         | [kɔləkt]                      | /kɔləkt/              |
| 71. walnut                          | [wɔ:lnʌt]                     | /wɔ:lnʌt/             |
| 72. cognate                         | [kɔgneɪt]                     | /kɔgneɪt/             |
| 73. tadpole                         | [tædpəʊl]                     | /tædpəʊl/             |
| 74. pistol                          | [pɪstl]                       | /pɪstl/               |
| 75. ingredient                      | [ɪŋɡri:diənt]                 | /ɪŋɡri:diənt/         |
| 76. melt                            | [mɛlt]                        | /mɛlt/                |
| 77. kleptomaniac<br>/kleptəmɛniæk/  | [kleptəmɛniæk]                |                       |
| 78. mascara                         | [mæskɑ:rə]                    | /mæskɑ:rə/            |
| 79. world                           | [wɔ:ld]                       | /wɔ:ld/               |
| 80. reptile                         | [reptail]                     | /reptail/             |
| 81. belt                            | [bɛlt], [bɛt]                 | /bɛlt/                |
| 82. infection                       | [ɪnfɛkʃn], [ɪnfɛʃn]           | /ɪnfɛkʃn/             |
| 83. selection                       | [sɪləkʃn], [sɪlɛʃn]           | /sɪləkʃ(ə)n/          |
| 84. contradiction<br>/kɔntrədɪkʃən/ | [kɔntrədɪkʃən], [kɔntrədɪʃən] |                       |

In 65-80, unlike what happened during the first round of data collection, the subjects recognized and identified consonant clusters in the English words and successfully pronounced them. However, in 81-84, five subjects pronounced the words correctly while five subjects still omitted a consonant this time the first consonant in a cluster and ended up pronouncing the same wrong forms pronounced during the first round of data collection five years back. Funnily enough, the three subjects who had been coming up with different forms were not among the five subjects who produced the wrong pronunciations.

#### 4. Discussion

The results presented in this study revealed interesting facts about the effects of phonological interaction in the acquisition of phonology among Yorùbá-English bilingual children. During the first round of data collection in the Yorùbá data, some phonological patterns which differ from the adults' pattern were observed. It was obvious that all the incorrect pronunciation in this instance were not because the subjects lacked the correct knowledge but because their linguistic knowledge was limited and was still developing at age 3. This claim can be substantiated by their perfect tone marking as well as the consistency displayed in the pattern of sound substitution. For example, the pronunciation of /Bólú/ as [Bójú], /Bísólá/ as [Bíjólá], /Dèd̀zì/ as [Tètì], /Wólé/ as [Wójé], /Folúké/ as [Tojúté] and /B̀nmi/ as [M̀nmi] was due to linguistic immaturity triggered by cognitive factors. Furthermore, the pronunciation of /B̀nmi/ as [M̀nmi] where three subjects substituted [b] for [m] can be phonologically explained. Both [b] and [m] are bilabial sounds with similar articulatory properties. It was a case of nasalization where a bilabial stop is substituted for a nasal stop. These claims can be validated with evidence from the second round of data collection when the subjects had become cognitively more mature with a well-developed linguistic apparatus at 8 years where they all pronounced the Yorùbá names correctly like adult native speakers.

The first set of data on English words revealed that all the subjects had problems with consonant clusters. Also, the effect of the phonological interaction between Yorùbá and English was evident in the subjects' outputs. For example, 'biscuit, melt, bread and belt' were pronounced [bititi] or [kikiti], [m̀eti], [b̀eti] and [b̀è̀ti] respectively. Following the subjects' early exposure to English, one would have expected the outputs to be /\*bikit/ or /\*kikit/, /\*m̀et/, /\*b̀et/ and /\*b̀è̀t/ respectively. The mispronunciation of the English words during the first round of data collection could be attributed to three factors: cognitive immaturity, developing linguistic faculty and the phonological interaction between the two languages. The phonological interaction was obvious in the following examples, /\*bititi/\*kikiti/ for biscuit, /\*b̀edi/ for bread, /\*m̀eti/ for melt and /\*b̀è̀ti/ for belt. Apart from the omission of a consonant sound in these four examples, vowel [i] was also added in front of the words to avoid the 'no consonant final rule' in Yorùbá, a clear case of phonological transfer triggered by interaction Paradis and Genesee (1996). Three subjects retained the velar stop [k] in its original positions of occurrence while the other subjects substituted it for the alveolar stop [t]. Also, the substitution of [l] and

[r] for [j] was constant in the outputs of the subjects in the first set of data in both Yorùbá and English.

In the second round of data collection, the subjects' performance had improved. For example, in the Yorùbá data, the names were correctly pronounced by all the subjects. However, five subjects had issues with the English words. They still pronounced four words incorrectly. Belt was pronounced as [bɛt], infection as [ɪnfɛʃn], selection as [sɪlɛʃn] and contradiction as [kɒntrədɪʃən]. Also, while 'biscuit', 'bread' and 'melt' were correctly pronounced, 'belt' was still mispronounced as /bɛt/ but the final vowel [ɪ] which appeared in the initial form was dropped. This showed an improvement in their acquisition of English phonology. A look at the error in 81-84 revealed a pattern. The error was the omission of the velar stop [k] in all instances where it preceded the palatal fricative [ʃ]. Following the claim of the CPH, based on length of exposure to English, fully developed linguistic faculty (at age 8) and age which was higher (compared to the initial period of data collection), the subjects should have overcome this problem.

The findings here are at variance with those of Isaiah (2017). For example, in the Yorùbá data in the first set of data collected, no case of consonant insertion or deletion of any kind was observed in this study. The only thing observed was consonant substitution and the pattern observed contrasted with what was reported in Isaiah (2017). For example, in this study, the voiced alveolar stop [d] and voiced palatal affricate [dʒ] were replaced with the voiceless alveolar stop [t]. The Alveolar fricative [s] was replaced with the voiceless palatal fricative [ʃ]. The Voiceless fricative [f] and voiceless velar stop [k] were replaced with the voiceless alveolar stop [t]. The alveolar lateral [l] and palatal liquid [r] were replaced with the palatal glide [j] which itself was not substituted in any context. The bilabial glide [w] was not substituted while the bilabial stop [b] was substituted for [m] in a single context and by only three subjects. Also, vowel [u] was replaced with [i] after a nasal. These results contrast with what was reported in Isaiah (2017).

For the target English words in the first set of data, findings from this present study revealed that there was no final consonant deletion. Instead, vowel [ɪ] was inserted in word-final position in some examples. Also, almost all the patterns of consonant substitution which occurred in the first set of Yorùbá data were observed. There was no case of consonant cluster as reported in Isaiah (2017). Instead, in such contexts, [l] and [r] were substituted for the glide (semivowel) [j] wherever they occur as the second consonant in a cluster. Examples are [ɪŋgʲi:tɪənt], /ɪŋgri:diənt/ 'ingredient' and [tʰɛtəmemiæt], /kleptəmemiæk/ 'kleptomaniac'. In this case, as shown in 33 and 35, what happens was gliding which affected the preceding consonant and not consonant cluster. Also, only three subjects retained [k] while it was replaced with [t] by the remaining seven subjects.

However, for the English data in the second round, there were conflicting results. While five of the subjects completely overcame the problem of consonant clusters,

five subjects still had problems with it in the exact way they did in the first set of data collected. Apart from belt, they all had issues with the pronunciation of [k] voiceless velar stop in word medial position whenever it occurred as the first consonant in a double cluster before the voiceless palatal fricative [ç]. Isaiah (2017) however reported conflicting results. For example, there were cases of consonant final deletion as well as consonant clusters. Also, [s] was replaced with [t], [r] was replaced with [l] in some contexts (consonant clusters) and [w] in other contexts. On its part, [k] was pronounced in all the contexts of the cluster. All these conflicted with those found in this present study.

The phonological patterns exhibited by the subjects in both Yorùbá and English are very complex which makes it difficult to propose specific rules as done in Isaiah (2007). Also, some rules proposed for the phonological patterns in Isaiah (2017) are contradictory. For example, she proposes a rule of ‘stopping’ presented below:

85. **Stopping**: a fricative is replaced by a stop in a word e.g.

|    | <b>Adult</b> | <b>Child</b> | <b>Gloss</b> |
|----|--------------|--------------|--------------|
| a. | /èfà/        | [èbá]        | ‘six         |
| b. | /Bósè/       | [Tótè]       | ‘a name’     |

In 85a, [f] a labio-dental fricative was replaced with [b] a bilabial stop while in 85b, [b] a bilabial stop is replaced with [t] another stop this time an alveolar stop. This is contradictory.

## 5. Conclusion

Bilingualism in childhood is considered a naturally unconscious event similar to learning how to walk. Scientific researches show that language aspects such as pronunciation and intonation are easier to acquire during childhood due to the availability of neuromuscular mechanisms that are only active until the age of 12. Thus, children under this age have the ability to attain accent-free pronunciation in any language. However, results from this study do not support this claim. Age is an important but not an overriding factor, especially in bilingual children acquisition. For example, at the age of 3, the subjects had problems with the pronunciation of some Yorùbá names which they completely overcame at age 8. Whereas at age 3, the same subjects had serious problems with the pronunciation of consonant clusters in English but at age 8, while some had overcome this problem, some still faced the same problem they faced at age 3. In line with the results of scientific research, at age 8, all the subjects should have overcome the problem with English words with consonant clusters since they had grown older and were still within the critical period. According to Thordardottir&Brandeker (2012), the rate at which bilingual children acquire production accuracy of their two sets of linguistic structures is believed to be slower for some structures compared to monolingual children because bilingual children do not exclusively attend to one language but to two at the same time. This reveals why acquisition in bilingual children tends to be problematic. Though age plays an important role in bilingual children acquisition, the most outstanding factor as shown in this study was interactive transfer which affected the

subjects' phonological outputs, particularly in English. One major revelation here is the disparity in the level and pattern of attainment among bilingual children in both languages. As revealed in the data, the effect of phonological interaction was prominent in the outputs of the subjects in English. While the subjects were able to overcome all the pronunciation errors exhibited in Yorùbá after five years, some still have issues with consonant clusters in English after the same number of years. In conclusion, since the disparities noticed in the data were produced by some of the subjects and not all of them, it confirms that humans experience the process of language acquisition/learning individually and differently which normally results in different outcomes.

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