

## Comparative Analyses between Chinese and Yoruba Phonology

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### Abstract

The study of the Chinese language by the Yorubas has rapidly grown in Nigeria. This article uses the comparative method by using the works of some Chinese linguists like Wang (2014) and Yoruba linguists like Owolabi (2011) to highlight the overview of the two languages, thereby making this paper point out the differences and similarities between the Chinese and the Yoruba phonological systems, focusing on the consonants, vowels, and tones. There are some sounds peculiar in Mandarin sounds that Yoruba speakers might find difficult to pronounce such as consonants like zh[tʂ], ch[tʂʰ], sh[ʃ], j[tʃ], q[tʃʰ], x[ç], vowels ü[y] and e[ɤ] and so on; but with the comparative analysis in this paper and in-depth descriptions of sounds in both languages, the Yoruba speakers will eventually find it easy to pronounce the unique sounds in Mandarin and vice versa.

**Keywords:** Chinese, Yoruba, phonetics, phonology, consonant, vowel, tone

### Introduction

The relationship between Nigeria and China has become one of the factors people delve into the studying their languages. The Yoruba language is one of the languages in Nigeria and some other countries like Togo, Benin, Brazil, etc. (Wikipedia 2023). The Yoruba language, like English, adopts the Latin writing system. One of the reasons the Yoruba language is an easy language to learn is that the phonetic system is almost the same as the orthographic system, and this is one of the differences with the Chinese language; the Chinese language uses special symbols for their writing system called Hānzì 汉字, but to make language learner know how to pronounce this characters, Pinyin Orthography system which is the Roman or the Latin style of writing introduced to guide the language learners in understanding the pronunciation of the Chinese sounds.

The importance of phonology in linguistics is undeniable; it is the basis of linguistic ability. Pronunciation is the first stage of learning or acquiring a language, and phonetics which is the detailed analysis of sounds helps the speaker to understand the sound pronounced. According to Dow (1972), "an understanding of the spoken language is more immediately useful than a knowledge of the written language." Zhu (2012) emphasizes the importance of phonetics, "phonetics was one of the most prosperous disciplines in Chinese linguistics during the early decades of the last century. Yet, in the latter half of the century, it had become marginalized before being revived in the new millennium. The rise and fall of its status in Chinese linguistics have been determined mainly by its ability to solve linguistic problems."

The Chinese language and the Yoruba language are part of languages that have well-structured systems. There are some similarities between these languages; apart from having consonants and vowels as the major segments, the tone is also essential. The function tone has in the Yoruba language is what it has in Mandarin, showing the difference in meaning between two or more similar words in terms of spelling and sounds. This paper shows the comparative analysis of Chinese and Yoruba phonology.

### Overview of Chinese Consonants

Consonant sounds are sounds produced when the air from the lungs forces its way out through an obstruction caused by articulators (Wang 2014:26). There are 22 Chinese consonants which are: b, p, m, f, d, t, n, l, g, k, h, ng, j, q, x, z, t, c, zh, ch, sh, r. The place and manner of articulation are the parameters that determine or distinguish Chinese consonants.

i. **Place of Articulation**

The place of articulation is where the obstruction occurs between two articulators. From the perspective of the place of articulation, there are 7 types of consonants in Mandarin Chinese (Wang 2014:27):

**Bilabial:** b[p], p[p<sup>h</sup>], m[m]; **Labio-dental:** f[f]; **Blade-alveolar:** z[ts], c[ts<sup>h</sup>], s[s]; **Alveolar:** d[t], t[t<sup>h</sup>], n[n], l[l]; **Retroflex:** zh[tʂ], ch[tʂ<sup>h</sup>], sh[ʂ], r[z]; **Palatal:** j[tɕ], q[tɕ<sup>h</sup>], x[ɕ]; **Velar sounds:** g[k], h[k<sup>h</sup>], h[x], ŋ[ŋ]

ii. **Manner of Articulation**

The manner of articulation is the parameter used to distinguish similar consonant sounds; it is how the air from the lung escapes the obstructions caused by the articulators. According to Wang (2014:28), the manners of articulation of the Chinese language are the **manner of obstruction, aspiration, and the state of the glottis.**

a. **Manner of obstruction**

From the perspective of manners of obstruction, there are 5 types of Mandarin Chinese:

**Stops:** [p], [ph], [t], [th], [k], [kh]; **Fricatives:** [f], [x], [ʂ], [ɕ], [z], [s]; **Affricates:** [tʂ], [tʂ<sup>h</sup>], [ʂ], [tɕ], [tɕ<sup>h</sup>], [ɕ]; **Nasals:** [m], [n], [ŋ]; **Lateral:** [l]

b. **Aspiration**

In the Chinese language, aspiration is one of the major ways of distinguishing between two consonants. Aspiration is the addition to a plosive consonant of a perceptible puff of breath (Dow, 1972:13). When the air coming out of the lungs is strong, the sounds are called **aspirated sounds**, e.g. {p, t, k, ch, c, q}; when the airflow is weak, the sound produced are called **non-aspirated sounds**, e.g. {b, d, g, zh, z, j} (Wang, 2014: 28). All aspirated sounds are either plosives or affricate in the Mandarin.

c. **State of the glottis**

When the vocal folds come together, and the air forces itself out there will be vibration and voiced sounds are produced. Chinese voiced sounds are the lateral {l}, the nasals {n, m ŋ}, and the fricative {r}. When the vocal folds are apart the air will pass through smoothly and produce a voiceless sound. Most Chinese consonants are voiceless.

**Chinese Consonants Description:** The following is the description of how the consonants are produced in Mandarin according to Wang (2014), but this section only gives an in-depth analysis of consonants that are not found in the Yoruba language:

- **p [p<sup>h</sup>]: Aspirated, voiceless, bilabial, plosive.** During pronunciation, the two lips are closed; a strong air coming from the lungs flows through the glottis freely, it stops at the obstruction caused by the lips but immediately forces itself out in an explosive manner, e.g., the ‘p’ in “破” pò [p<sup>h</sup>oə<sup>51</sup>] (to break).
- **b [p]: non-aspirated, voiceless, bilabial, plosive.** Same as p [p<sup>h</sup>], but with weak airflow, e.g., the b in “波” bō [boə<sup>55</sup>] (wave).
- **m [m]: Bilabial, nasal sounds.** E.g., the m in “妈妈” māma [ma<sup>55</sup>ma] (mother).
- **f [f]: Voiceless, bilabial, fricative.** e.g., the ‘f’ in “飞” fēi [fei<sup>55</sup>] (to fly).
- **t [t<sup>h</sup>]: Aspirated, voiceless, alveolar, plosive.** The strong air passes through the glottis freely but is stopped by the obstruction caused by the raised tip of the tongue that presses against the alveolar ridge before it will come out explosively. E.g., ‘t’ in “他” tā [t<sup>h</sup>a<sup>55</sup>] (he).
- **d [t]: non-aspirated, voiceless, alveolar, plosive.** Same as t [t<sup>h</sup>] but with a weak airflow. E.g., ‘d’ in “大” dà [ta<sup>51</sup>] (big).
- **n [n]: Alveolar, nasal.** E.g., ‘n’ in “你” nǐ [ni<sup>214</sup>] (you).
- **l [l]: Alveolar, lateral sound.** E.g., ‘l’ in “来” lái [lai<sup>35</sup>] (come).
- **k [k<sup>h</sup>]: Aspirated, voiceless, velar, plosive.** The back of the tongue presses against the velum; the strong air flows through the glottis freely; but is stopped by the obstruction, then immediately bursts out explosively. E.g., ‘k’ in “考” kǎo [k<sup>h</sup>ao<sup>214</sup>] (take a test).

- **g [k]: non-aspirated, voiceless, velar, plosive.** Same as 'k [k<sup>h</sup>]' but the air will be weak. For example, the 'g' in "高" gāo[kɑo<sup>55</sup>] (tall).
- **h [x]: Voiceless, velar, fricative.** During pronunciation, the back of the tongue moves close to the velum leaving a very narrow space; the air passes through the glottis freely but forces itself out of the narrow space created by the obstruction, creating a frictional and noisy sound. E.g., the 'h' in "喝" hē [hɛ<sup>55</sup>] (to drink).
- **ng [ŋ]: Velar, nasal.** The back of the tongue presses against the velum; the air forces its way out of the obstruction thereby causing a vibration. The velum moves down allowing the air to flow through the nasal cavity; simultaneously, the remaining air is lightly stopped by the obstruction caused by the back of the tongue and the velum. For example, the 'ng' in "胖" pàng [p<sup>h</sup>ɑŋ<sup>51</sup>] (fat).
- **z [ts]: non-aspirated, voiceless, blade-alveolar, affricate.** The tip of the tongue presses against the back of the teeth; the weak air coming from the lungs passes through the glottis easily but is stopped at the point of obstruction caused by the tip of the tongue and the back of the teeth, the obstruction will immediately open narrowly to allow the air force itself out in a frictional manner. For example, the 'z' in "在" zài [tsai<sup>51</sup>] (to be at).
- **c [ts<sup>h</sup>]: Aspirated, voiceless, blade-alveolar, affricate.** Same as 's' but with a strong puff of air. E.g., the 'c' in "菜" cài [ts<sup>h</sup>ai<sup>51</sup>] (dish).
- **s [s]: Voiceless, blade-alveolar, fricative.** The tip of the tongue moves closer to the back of the teeth; the air passes through the glottis easily and then forces its way out through the narrow opening created by the tip of the tongue and the back of the teeth in a frictional and noisy manner. E.g., the 's' in "四" "sì" [sɿ<sup>51</sup>] (four).
- **zh [tʂ]: non-aspirated, voiceless, retroflex affricate.** The tip of the tongue bends and presses itself against the front part of the palate; the weak air coming from the lungs will pass through the glottis freely, and the velum moves up blocking the air from passing through the nose, rather through the oral cavity. The air is stopped by the obstruction which will immediately create a narrow space for the air to force itself out in a frictional manner. E.g., the 'zh' in "站" zhàn [tʂan<sup>4</sup>] (station).
- **ch [tʂ<sup>h</sup>]: Aspirated, voiceless, retroflex, affricate.** Same as 'zh' but with a strong air. E.g., the 'ch' in "吃" chī [tʂ<sup>h</sup>i<sup>55</sup>] (to eat).
- **sh [ʃ]: Voiceless, retroflex, fricative.** The tip of the tongue is closed to the front part of the palate leaving a narrow passage; the air flows through the glottis freely, and the velum moves up blocking the air from passing through the nose, rather through the oral cavity. The air forces itself out frictionally through the created slit formed by the articulators. E.g., the 'sh' in "说" shuō [ʃuə<sup>55</sup>].
- **r [ʐ]: Voiced, retroflex, fricative.** Same process as 'sh' but the glottis will be closed making the air force itself out, thereby causing a vibration at the vocal cord. E.g., the 'r' in "日" rì [ʐi<sup>51</sup>] (sun).
- **j [tɕ]: non-aspirated, voiceless, palatal, affricate.** During pronunciation, the front part of the tongue presses against the front part of the palate. The weak air passes through the glottis freely; the velum moves up blocking the air from passing through the nose, rather through the oral cavity. The articulators stop the air and then immediately create a narrow gap to make the air force itself out in a frictional manner. E.g., the 'j' in "金" jīn [tɕin<sup>55</sup>] (gold).
- **q [tɕ<sup>h</sup>]: Aspirated, voiceless, palatal, affricate.** Same as 'j' but the air coming out of the lungs is strong. E.g., the 'q' in "气" qì [tɕ<sup>h</sup>i<sup>51</sup>] (air).
- **x [ɕ]: Voiceless, palatal, fricative.** The front part of the tongue moves close to the front part of the palate leaving a narrow passage; the air flows through the glottis freely, and the velum moves up blocking the air from passing through the nose, rather through the oral cavity. The air forces itself out frictionally through the created narrow space formed by the articulators. E.g., the 'x' in "西" xī [ɕi<sup>55</sup>] (west).

Manner of Articulation		Place of Articulation							
		bilabial	Labio-dental	Blade-alveolar	Alveolar	Retroflex	Palatal	Velar	
Stops	Non- Aspirated	[p]			[t]			[k]	
	Aspirated	[p <sup>h</sup> ]			[t <sup>h</sup> ]			[k <sup>h</sup> ]	
Affricates	Non- Aspirated			[tʃ]		[tʂ]	[tɕ]	[ʃ]	
	Aspirated			[tʃ <sup>h</sup> ]		[tʂ <sup>h</sup> ]	[tɕ <sup>h</sup> ]		
Fricative	Voiceless		[f]	[s]		[ʃ]	[ç]		
	Voiced					[ʒ]			
Nasal	Voiced	[m]			[n]			[ŋ]	
Lateral	Voiced				[l]				

Picture 1: Chinese consonant table

### Overview of Chinese Vowels

According to Wang (2014: 35), Mandarin Chinese has 10 simple vowels and 13 compound vowels. a[a], o[o], e[ɛ], ê[ɛ̂], i[i], u[u], ü[y], -i [ɿ], -i [ʅ], and er[ə̯] are simple vowels, in these 10 vowels can be divided into 3 categories, dorsal vowels [a], [o], [ɤ], [ɛ], [i], [u], [y] apical Vowels [ɿ], [ʅ] and retroflex vowels [ə̯]. The two apical vowels [ɿ] and [ʅ], are the allophones of the dorsal vowel [i] they can only serve as the finals of [ts, ts<sup>h</sup>, s], and [tʂ, tʂ<sup>h</sup>, ʂ] respectively. The 13 compound vowels in Mandarin are ai, ei, ao, ou, ia, ie, ua, uo, üe, iao, iou, uai, and uei. This article will only highlight the descriptions of the seven dorsal vowels.

In terms of the **height of the tongue**, there are 4 types of tongue vowels in Mandarin: **High vowels**: i[i], ü [y], u[u]; **Mid-high vowels**: e[ɛ], o[o]; **Mid-low vowel**: ê [ɛ̂]; **Low vowel**: a[a].

In terms of the **position** of the tongue that is raised, Mandarin vowels are categorized as **Front vowels**: i[i], ü[y], ê[ɛ̂]; **Central vowel**: a[a]; **Back vowels**: u[u], e[ɛ], o[o]

### Chinese simple vowels description

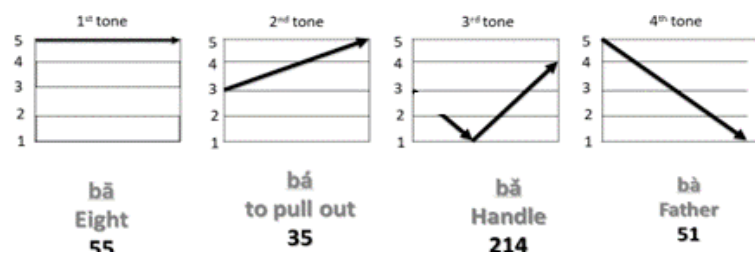
In addition to the height of the tongue and the position of the tongue raised, the **state of the lips** (rounded or unrounded) is also used to determine the difference between vowels (Wang, 2014:35). The following are the dorsal vowels in Chinese, excluding the apex vowels, retroflex vowels, and compound vowels:

i[i]: high, front, unrounded dorsal vowels. For example, the ‘i’ in "鸡" “jī” chicken.

- ü [y]: high, front, round dorsal vowels. For example, ‘ü’ in “nǚ 女” female.
- u[u]: high, front, round dorsal vowels. For example, the ‘ù’ in rù “入” enter.
- e[ɛ]: mid-high, front, unrounded dorsal vowels. For example, the ‘è’ in “rè 热” “hot”.
- o[o]: mid-high, front, round dorsal vowels. For example, the ‘ò’ in “kǒu 口” mouth.
- ê [ɛ̂]: semi-low, front, unrounded dorsal vowels. For example, the é in “bié 别” don’t.
- a[a]: centre, front, unrounded dorsal vowels. For example, the ā in “bā 八” eight.

### Overview of Chinese Tones

There are 4 tones in the Mandarin Chinese phonetic system, Yinping 阴平 ‘high-flat tone’ (ˉ) (also called the first tone), Yangping 阳平 ‘rising tone’ (ˊ) (second tone), Shangsheng 上声 ‘falling-rising tone’ (ˇ) (third tone), and Qusheng 去声 ‘falling tone’ (ˋ) (fourth) Sound), as well as the neutral tone without a tone mark (Wang, 2014:49).



PICTURE 2 Chinese tone pitch range

### Chinese Tone Description

These are the description of the four major tones in the Chinese language according to Wang (2014:49).

1. First tone (ˉ): When pronounced, the voice is high and flat, with basically no falling or rising. The pitch range value is [55]. E.g., "他" tā, "一" yī, "空" kōng.
2. Second tone (ˊ): It is pronounced from mid to high pitch, and the pitch range value is [35]. E.g., "别" bié, "同" tóng, "学" xué.
3. Third tone (ˇ): When pronounced, it first drops from the mid-low tone to the low tone, and then reaches the mid-high tone, the pitch range value is [214]. E.g., "我" wǒ (me, I), "雪" xuě (snow), "统" tǒng (together).
4. Fourth tone (ˋ): When pronounced, it falls from the highest to the lowest, and the pitch value is [51]. E.g., "握" wò hold, "热" rè hot, "那" nà that.

### Overview of Yoruba Consonants

Through the places of articulation, manners of articulation and the state of the glottis as distinguishing factors, there are 18 consonants in the Yoruba phonetic system. From the **places of articulation perspective**, there are 8 types of Yoruba consonants Owolabi (2011:51) which are the **bilabial sounds**: [b], [m]; **labio-dental**: [f]; **alveolar sounds**: [t], [d], [s], [n], [r], [l]; **Palato-alveolar sounds**: [ʃ], [dʒ]; **Palatal sound**: [j]; **Velar sound**: [k], [g]; **Labio-velar sounds**: [kp], [gb], [w]; and **glottal sound**: [h].

Yoruba consonants sound can also show distinguishing factors through some manners of articulation. According to Owolabi (2011), there are six manners of articulation in the Yoruba phonetic system. He classified the affricate sound to be a part of the stop category, however, this article brings out affricate as a separate manner of obstruction for Yoruba consonants:

- Stops: [b], [t,d], [k, g], and [kp̄, gb̄].
- Fricatives: [f], [s], [ʃ], and [h].
- Affricate: the palato-alveolar sound [dʒ].
- Flap/tap sound: [r].
- Lateral sound: [l].
- Nasal: the bilabial [m] and the alveolar [n].
- Approximants: the palatal [j] and the labio-velar [w].

**The description and pronunciation of Yoruba consonants:** The following is the pronunciation of special consonants in Yoruba. The description of some consonants is the same as in Mandarin, so it won't be repeated in this section.

- **b [b] Voiced bilabial, plosives.** During pronunciation, the lips are closed, the soft palate rises to block the nasal passage, and the airflow trembles the vocal cords, breaking through the barriers of the lips through the oral cavity, to make an explosive sound. E.g., [b] in *bùbá* [buba] (*shirt*).



- **t [t] Voiceless, alveolar plosive.** Same as the description of d[t] in Chinese. E.g., [t] in tutù [tutu] (cold).
- **d [d] Voiced, alveolar plosive.** The pronunciation method is the same as t, but the vocal cords are vibrated by the airflow. E.g., d[d] in dúdú [dudu] (black).
- **k [k] Voiceless, velar plosive.** Same as Chinese g[k]. E.g., k[k] in kúrú [kuru] (short).
- **g [g] Voiced, velar plosive.** The pronunciation method is the same as Mandarin g[k] except that the vocal cords are vibrated by the airflow. E.g., g[g] in ga [ga] (high).
- **p [kp] Voiceless, labio-velar plosive.** During pronunciation, the lips are closed, and the back of the tongue meets the soft palate simultaneously. The soft palate rises to block the nasal cavity. The airflow does not vibrate the vocal cords. The airflow through the oral cavity then breaks through the two points of obstacles at the velum, and bursts through the lips barriers simultaneously to make an explosive sound. E.g., p[kp] in pupa [kpukpa] (red).
- **gb [gb̩] Voiced, velar plosive.** The pronunciation method is the same as [kp̩], except that the airflow vibrates the vocal cord. E.g., gb[gb̩] in gbogbo [gbogbo] (all).
- **s [s] Voiceless, alveolar fricative.** The tip of the tongue is close to the root of the tooth, forming a slit, the soft palate rises to block the nasal cavity, the airflow does not vibrate the vocal cords, then forces itself out of the narrow gap between the tip of the tongue and the alveolar in a fricative manner. E.g., s[s] in simi [simi] (rest).
- **ʃ [ʃ] Voiceless palato-alveolar fricative.** The middle of the tongue is close to the hard palate, forming a slit. The soft palate rises to block the nasal cavity, and the airflow does not vibrate the vocal cords. The airflow is forced through the narrow slit by the middle of the tongue and the hard palate to make a fricative sound. E.g., sh[ʃ] in šíbí [ʃibi] (the spoon).
- **h [h] Voiceless, glottal fricative.** The glottis produces this consonant. When pronounced, the vocal cords form a slit; the soft palate rises to block the nasal passage, the airflow does not vibrate the vocal cords, and the sound is rubbed out from the narrow opening of the vocal cords. E.g., h[h] in hun [hũ] (to knit).
- **j [dʒ] Voiced, palate-alveolar affricate.** The middle of the tongue forms an obstruction with the passive articulator between the alveolar and the hard palate. The soft palate rises to block the nasal cavity, and the airflow vibrates the vocal cords. The airflow rushes through the obstruction, stops, and immediately squeezes itself out from the narrow gap. E.g., j[dʒ] in ji [dʒi] (to be awake)
- **r [r] Voiced, alveolar flap.** The tip of the tongue curves back and then taps the alveolar. The velum moves up blocking the nasal passages, the airflow trembles the vocal cords, and the curled tip of the tongue bounces the root of the tooth to make a sound. E.g., r[r] in rí [ri] (see).
- **y [j] Voiceless, palatal approximant.** During pronunciation, the tongue surface is lifted not too close to the hard palate, the soft palate rises to block the nasal cavity, the airflow trembles the vocal cords, and the airflow rubs slightly at weak obstruction caused by the tongue surface and the hard palate to produce sound. E.g., y[j] in yó [jo] (full). Wikipedia (2022)
- **w [w] Voiceless, labio-velar approximant.** The lips are slightly closed, and the tongue surface is also close to the soft palate. The soft palate rises to block the nasal cavity, and the airflow vibrates the vocal cords. The airflow rubs slightly at the obstruction by the back of the tongue and the soft palate, and simultaneously the bilabial obstruction to make a sound. E.g., w[w] in wá [wa] (come).

Place of Articulation Manner of Articulation		Bilabial	Labio- dental	Alveolar	Palato- alveolar	Palatal	Velar	Labio- velar	Glottal
		Stop	Voiceless		[f]	[t]			[k]
	Voiced	[b]		[d]			[g]	[gb]	
Fricative	Voiceless			[s]	[ʃ]				[h]
	Voiced								
Affricate	Voiced				[dʒ]				
Nasal	Voiced	[m]		[n]					
Approximant	Voiced					[j]		[w]	
Flap	Voiced			[r]					
Lateral	Voiced			[l]					

Picture 3: Yoruba Consonant table

### Summary of Yoruba Vowels

According to Owolabi (2011), there are three parameters for determining the Yoruba vowels which are the state of the tongue, the state of the velum, and the state of the lips.

In terms of the state of the tongue, the position of the tongue raised, and the height of the tongue will be considered.

In terms of the **position of the tongue raised**, there are three categories of Yoruba vowels:

Front vowels: i[i], in[ĩ], e[e], e[ɛ], ɛn [ɛ̃].

Central vowel: a[a].

Back vowels: u[u], un[ũ], o[o], o[ɔ], ɔn[ɔ̃].

For the **height of the tongue**, the categories are:

High vowels: i[i], in[ĩ], u[u], un[ũ].

Mid-high vowels: e[e], o[o].

Mid-low vowels: e[ɛ], ɛn [ɛ̃], o[ɔ], ɔn [ɔ̃].

Low vowels: a[a]

For the **state of the velum**, these oral vowels a[a], e[e], e[ɛ], i[i], o[o], o[ɔ], u[u] are produced when the velum is raised to close the nasal cavity; if the velum is lowered the air can escape through the nasal and oral cavity simultaneously, then the nasal vowels an[ã], in [ĩ], ɛn [ɛ̃], ɔn[ɔ̃], and un[ũ] will be produced.

When the lips are flat, sounds like i[i], in[ĩ], e[e], e[ɛ], ɛn [ɛ̃], a[a], an[ã] are pronounced; when it is round the back vowels u[u], un[ũ], o[o], o[ɔ], ɔn[ɔ̃] are pronounced.

### Yoruba Vowel Description

The following is a simple description of Yoruba vowels. When pronouncing nasal vowels, airflow exits both the nasal cavity and the oral cavity.

- i [i]: high, front, unrounded vowels. E.g., igi [i] [igi] in (tree).
- in [ĩ]: high, front, unrounded, nasal vowel. E.g., ‘in’ [ĩ] in irin [irĩ] (steel).
- u [u]: high, back, round vowels. E.g., ‘u’ in ilù [ilu] (drum).
- un [ũ]: high, back, round, nasal vowel. E.g., ‘un’ [ũ] in Irun [irũ] (locust bean).
- e [e]: mid-high, front, unrounded vowels. E.g., [e] in ewé [ewe] (leaf).
- o [o]: mid-low, back, round vowels. E.g., [o] in owó [owo] (money).
- e [ɛ]: mid-low, front, unrounded vowel. E.g., ‘e’ [ɛ] in eɣe [eɣɛ] (bird).
- ɛn [ɛ̃]: mid-low, front, unrounded, nasal vowel. E.g., ‘en’ [ɛ̃] in iyen [iyɛ̃] (that).
- o [ɔ]: mid-low, back, round vowels. E.g., ‘o’ [ɔ] in ɔwó [ɔwɔ] (hand).
- ɔn [ɔ̃]: mid-low, back, round, nasal vowel. E.g., ‘on’ [ɔ̃] in èfon [ɛfɔ̃] (mosquito).
- a [a]: low, central, unrounded, nasal vowel. E.g., [a] in ajá [adʒa] (dog)

### Summary of Yoruba Tone

The Yoruba language has three tones: low, medium, and high. but their pitch ranges are different. Tone marks are also placed on the head of the vowel, also on the nasalized syllabic consonant (n) in the Yoruba language. In the Yoruba alphabet, except for these nasalized syllabic consonants, the mid-tone is unmarked, (Bamgbose, 1966:12). Yoruba tones can also distinguish the meaning of two similar words, i.e., a change in tone can lead to a change in the meaning of words. E.g., *igbá* (gourd) *ìgbà* (time) *igba* (two hundred).

### Tone description in Yoruba

- Low tone (˘): When pronounced, the pitch is low and flat, without rising and falling, like the ‘do’ of a musical note, the pitch range value is 11. E.g., *òrò* (words) *isàlẹ̀* (below)
- Mid-tone (ˊ): When pronounced, the pitch is neither high nor low but also flat. Like the ‘re’ of a musical note, the pitch range value is 33. E.g., *ọmọ* (child).
- High tone (ˋ): When pronounced, the tone is high and flat, without rising and falling changes. Like the ‘mi’ of music notes, the key is 55. e.g., *Ó* (he/she/it).

### Tonal changes in Yoruba

Sometimes, one tone can change to another. Folarin Olatunbosun (2009) believes that some conditions can change tones in the Yoruba language.

- In a sentence, if a monosyllabic verb was originally a low tone, it will become a mid-tone before a noun. E.g., *rà: Olú ra dọ̀dọ̀.* (*Buy: Olú bought fried plantains.*)
- In a sentence, if the last syllable of a multi-syllabic noun as the subject has a low tone, and the first syllable of the word close to it also has a low tone, it becomes a high tone. E.g.: *òjò: Òjò rẹ̀ ní ànà.* (*Rain: It rained yesterday.*)
- In the sentence, the middle tone of the last syllable of the multi-syllabic noun which is the subject of a sentence should be turned into a high tone. E.g.: *adiyẹ: Adiyẹ̀ ti fò lọ.* (*Chicken: The chicken has flown away.*)

### Similarities between Chinese and Yoruba Phonological Systems

Looking at the overview of the Chinese and Yoruba phonological systems, there are some similarities between the two languages ranging from consonants, vowels, and most especially tone. For consonants, the Yoruba has a clear correspondence with Chinese nasal sounds [m, n], lateral sounds [l], and the fricative [f]. The Yoruba ‘t’ and ‘k’ and the Chinese ‘d’ and ‘g’ are both pronounced as [t] and [k] respectively. Some consonants are pronounced slightly. Similarly, for example, Chinese [s] and Yoruba [s]. Although they have the same phonetic symbols, the place of articulation of the two consonants is slightly different. According to Zein (2018), the Chinese [s] is a dental sibilant sound, while the [s] in the Yoruba language is an alveolar sound (Owolabi, 2011: 52).

In terms of the vowels, both languages have the [a, u, o, ɛ, and i] vowel sounds, which might have different functions in a syllable but are pronounced the same way. These vowels don’t also have a tense and lax counterpart compared to some languages like English. Both languages also have some unique vowels that set them apart from most languages, for example, the Yoruba language has nasal vowels like [ẽ, õ, ù] and so on while the Chinese vowels have apical vowels [ɿ and ʅ].

The pitch contour (tones) of a syllable is used to distinguish words from each other (Wikipedia, 2023). In these languages, tones can distinguish the meaning between two similar words. For example, in Chinese "kū" and "kù" have different meanings, the former means "cry" and the latter means "cool". In Yoruba, "ó kú" (he died) and "ó kù" (it remains) have different meanings. Another similar aspect is that their tone marks are placed on the vowel head, and a tone is a syllable. According to Wang (2014:53), "all Chinese Mandarin syllables have a tone, even if there isn’t a tone mark on them."

The pronunciation of the Chinese high-flat tone (ˊ) and Yoruba high tone (ˋ) is the same, they are both high and flat, and there is no change of rising or falling. Therefore, the Chinese "kū" [k<sup>h</sup>u<sup>55</sup>] (哭) "to cry" has the same tone as the Yoruba "kú" [ku<sup>55</sup>] "to die". The pronunciation of the third tone in Mandarin when it is placed with other tones is like the low tone in Yoruba. For example, the tone of "我" 'wǒ' in "我是" 'wǒ shì' (I am) is as low as "bà" in Yoruba "bàbà" (father).



### Differences between Chinese and Yoruba Phonological Systems

There are 22 consonants in Mandarin Chinese. Except for [m], [n], [r], [l], and [ŋ] which are voiced, all other consonants are voiceless, which is different from Yoruba or English. In the Chinese consonant phonetic system, the difference between some consonant pairs (such as [p]—[p<sup>h</sup>], [ts]—[ts<sup>h</sup>], [t]—[t<sup>h</sup>], [tʂ]—[tʂ<sup>h</sup>], [tɕ]—[tɕ<sup>h</sup>], [k]—[k<sup>h</sup>]) is that one is aspirated while the other is unaspirated (Zein, 2008). But in Yoruba, voiced and unvoiced sounds can only distinguish similar consonant meanings, such as [t]—[d], [k]—[g], and [kp̄]—[gb̄]. In Chinese k[k] and g[k<sup>h</sup>] are both voiceless velar stops, the difference is that k[k] is a non-aspirated sound, and g[k<sup>h</sup>] is aspirated. In the Yoruba consonant phonetic system, k[k] is a voiceless sound while g[g] is a voiced sound and that is the only distinguishing factor in their characteristics. E.g.:

Chinese: [k] in 哥 ge [kɤ<sup>55</sup>] ‘elder brother’

Yoruba: [g] in ga [ga] ‘tall’.

Chinese h[x] and Yoruba h[h], although share the same letter, are pronounced differently. Chinese "h" [x] is pronounced at the soft palate, while in Yoruba, it is a glottal sound [h]. The letter "r" is the same in both languages but pronounced differently, the "r" in Chinese, it's a retroflex fricative [ʐ], while the "r" in the Yoruba word "rà" (to buy) is an alveolar flap sound [ɾ].

Comparing pictures 1 and 3, we can see that some consonants in Yoruba are not in Chinese. For example, the voiceless and voiced labio-velar plosive [kp̄] and [gb̄] respectively, also the palato-alveolar affricate [dʒ] and fricative [ʃ]. Chinese also has special consonants, which the Yoruba consonant table does not have, like [tʂ], [tʂ<sup>h</sup>], [ʂ], [tɕ], [tɕ<sup>h</sup>], [ɕ]; these sounds would be the most difficult Chinese consonants to pronounce for Yoruba speakers.

Although 'w' and 'y' are both semi-vowels in these two language systems, in Yoruba, both phonemes are consonants, for example, wú [wu<sup>55</sup>] (expanding) and yí [ji<sup>55</sup>] (to rotate). These two sounds are not consonants in the Chinese language system but are called zero initials because they are only used for orthographical representation, e.g., 'w' in “五 wu” (five) and 'y' in “以 yi” (by the means of). Although the International Phonetic Alphabet will mark them as [wu] and [ji], Huang Borong and Liao Xudong (2011) stated that: “The actual pronunciation of "wu" (五) is [u], which is a rhyme, and "w" is just a letter for sound insulation, don't think it is a rhyme.”

In terms of vowels, Yoruba has nasalized vowels, which can distinguish the meaning of similar words, e.g., O gbò [gb̄ɔ] (you hear), O gbón [gb̄ɔ̃] (you are smart). Obviously, [ɔ̃] is not a phonemic variant of [ɔ] in the Yoruba language system. From the letter point of view, the alphabet that depicts the nasality of "ɔ̃" is the "n" after “ón”, but the sign is not a phoneme, so it is not pronounced as [n]. However, in the Chinese language system, the "n" in “烟” (yān) ‘smoke’ [iɛn] is not just a letter or pinyin sign, but also a phoneme (with nasal vowels), so the nasal alveolar [n] should be pronounced. Another special vowel in Yoruba is the mid-low back rounded vowel [ɔ̄], which neither exists in the general list of the simple nor the compound vowels in Mandarin. Apart from the 13 compound vowels and 16 nasal compound vowels in Chinese, there are also special Chinese vowels in the 10 simple vowels that Yoruba does not possess. For example, the mid-high back unrounded vowel [ɤ], the high front rounded vowel [y], the two apex vowels [ɿ] and [ʅ], and the retroflex vowel [ʂ].

In addition to these differences, Yoruba and Chinese phonological systems have some similar vowels but their syllabic functions are different. In the Yoruba, these vowels can serve as syllables on their own, but not the case in Chinese. For example, [ɛ] in the Yoruba word ‘ẹje’ [ɛdʒɛ] (blood) can stand alone as a syllable and can be combined with consonants as well. In Chinese, “ê[ɛ]” can only be paired with other vowels, such as in “越 yuè” [yɛ<sup>51</sup>] (more), “烟 yān” [iɛn<sup>55</sup>] (smoke), and “也 yě” [iɛ<sup>214</sup>] (also). Another phoneme that cannot be used as a syllable in the Chinese system is "[o]". Although orthographically it is paired with words with [+labial] “波 bō”, and interjections, but pronounced as a compound vowel "[uə] or [əu/ou]". "[o]" in Mandarin is the nucleus in a word with a

compound final like "kǒu 口" (mouth). This vowel is used as a single vowel syllable, not as a diphthong in the Yoruba phonetic system, for example, 'ó ló' (she goes), and "o" in 'orí' (head).

In terms of tones, the Chinese tones have only one flat tone which is the first tone, and the other tones have changes in rising or falling or both. However, the three tones in Yoruba neither rise nor fall; they are all flat, with a high tone of 55 (five to five pitch range), a mid-tone of 33, and a low tone of 11. Although the tones of Yoruba and Chinese change; in Chinese, either in sentences or in multi-syllabic words, the tones can change. For example, the first tone on 'yī' (one) will change when the syllable is close to other tones, it will become the second tone. The third tone will also become the second tone or a low tone if it is close to other tones. For example, the first syllable in the '洒水车' (sǎshuǐjī) "sprinkler" should become the second tone (Wikipedia, 2023). The tonal change in Yoruba only appears in sentences. Finally, apart from tones being applied on vowels in both languages, tones can also be applied to the Yoruba syllabic consonants "n and m" Bamgbose, 1966:12, e.g., "ó ńjọ" (she is dancing).

### Conclusion

One of the most important aspects of language learning is phonology, this article showed the phonological systems of two languages, thereby bringing out their similarities and differences. The Yorubas may find it hard to pronounce some Chinese sounds because they are entirely not in the Yoruba phonological system, while some slightly different consonant sounds can still be pronounced because some of their nearly similar features i.e., the [s], [t], [p] and so on. In terms of vowels, the Chinese vowels are more than the Yoruba because the Chinese language has complex vowels; the Yoruba vowels consist of the nasal vowel which the Chinese vowel does not have, the only set of vowels like it is the vowels with the nasal consonant ending which are quite different. The Chinese tones are five in number but one as a neutral tone, while the Yoruba tones are three. The distinctive distinguishing part of the two language tone systems is that the Yoruba language tones are all flat while the Chinese tones have just a flat one and the others are either rising or falling.

### References

- Chen Zhishuang. 2010. Comparison of Chinese and English phoneme system and its enlightenment to phonetics teaching. Overseas Education College, Xiamen University.
- Dow. 1972. An Outline of Mandarin Phonetics. Australia: Australia National University Press.
- Folarin, O. 2009. Eto Iro ati Girama Yoruba. Osogbo: Olatunbosun Publishers.
- Huang Danli. 2011. A review of research on Chinese phonetics teaching as a foreign language [J]. Overseas Education College, Xiamen University.
- Huang Borong. 2011. Modern Chinese (Volume 1). Beijing: Higher Education Press.
- Kola Owolabi. 2011. Ijinle Itupale Ede Yoruba (Fonetiiki ati Fonoloji). Ibadan: Universal Akada Books Nigeria Limited.
- Li Mei. 2008. Comparative Analysis of Chinese Phonetics and English Phonetics. Journal of the Inner Mongolia University of Technology.
- Wang Jianjun. 2014. Advanced Chinese. Suzhou: Soochow University Press.
- Wikipedia 2023. Standard Chinese Phonology. Last modified 2<sup>nd</sup> February 2023.
- Zhang Rui. 2008. A comparative study of Chinese and English sounds [J]. Liaoning: Journal of the Liaoning University of Technology (Social Science Edition).
- Zhu Xiaonong. 2012. Chinese Phonetics. Hongkong: Journal of the Hongkong University of Science and Technology.