

Chapter 3**Methodology****Restatement of Background and Purpose for the Study**

Though this study is also a Voice Onset time (VOT) analysis of bilingual Somali-English speakers, it is not only a descriptive study. It seeks to answer important questions concerning the effect of a speaker's age of arrival in an English speaking country and the influence of length of residency on the acquisition of English stop consonants. Additionally, this study is concerned with Somali VOT in the light of universal acoustic tendencies. What are the pronunciation errors Somali speakers are likely to have? This study seeks to answer these questions.

Research Questions

The study will be based on the following research questions:

1. Does the age of arrival effect the acquisition of English stop consonants for Somali speakers of English?
2. Is the length of residency a factor for the acquisition of English stop consonants for Somali Speakers of English?

Background of the Somali Language

The Somali language is a member of the Afro-Asiatic family of languages. Its language family is classified as a Cushitic language. The Cushitic language is well organized into three branches: North Cushitic, Central Cushitic and East Cushitic. Somali is part of the East Cushitic family, and its protolanguages are considered to be Afar and Oromo. It is important to note, however, although Somali has various dialects, the exact computation of the different dialects, which are spoken by lots inhabitants who live in different regions of

Somalia, is next to impossible because there has never been a comprehensive sociolinguistic study of the Somali language. As of matter of fact, the standardization history of the Somali language is moderately short because it has only been the official language of Somalia from the time when it became a written language in 1972. Before this, the official colonial languages of the Somali government and the educational institutes were Italian in the south and English in the north. Equally important, Arabic was an influential language due to Islamic influence dating back to the period when Islam spread to Africa in the seventh and eighth centuries. As a result, Arabic was disseminated all over the country. Still, most Somalis cannot speak Arabic though they are able to read and write it, as nearly all Somalis practice Islam and are required to learn the Quran, which is in Arabic.

Participants

In this study, twenty participants (ten males and ten females) whose primary language is Somali when interacting with other Somali-English bilinguals was selected. Table 1 & 2 provide basic demography about the speakers. The researchers used generic Somali names so that the participants' identities are kept concealed. It is worth noting here, however, although the age of arrival is an important marker when studying a second/foreign accent as stipulated by the critical period hypothesis, the age of onset of puberty varies between individuals and genders as mentioned previously the age of puberty occurs between 13 and 16 years in boys and 11 and 14 year in girls and often construed legally as 14 in boys and 12 in girls. In the view of this fact, it is therefore important to mention that the participants in this study involved both males and females with various onset age of puberty. Consequently the data collected from the participants could not fittingly be categorized across the subjects' gender and onset age of puberty since direct comparison was problematic. With this in mind, I decided to use the Sociolinguistic Method, which suggests that second/foreign accents

marker stops at the age of 17. The sociolinguistics approach is important when studying Sociophonetic and speech perception. In such case according to (Sankoff & Blondeau 2007); (Labov 2001, Tagliamonte & D'Arcy 2009) as cited in (William, Ingrid & Josef, 2013,p.30) underscore the weight of this assertion by stating the following:

The quantitative measure of linguistic variables across age levels yields a view of linguistic change in APPARENT TIME, which may be confirmed by a variety of REAL-TIME data—by qualitative observations at an earlier time, by reinterviews of the same subjects at a later time (panel studies), or by repeated samplings of the community as a whole (trend studies). An increasing number of such restudies have confirmed the general view that most speakers stabilize their linguistic system in late adolescence, with a decreasing tendency to adopt new forms, so that apparent-time studies will underestimate the rate of change in most cases only slightly (Sankoff & Blondeau 2007). As a result, the apparent-time pattern corresponding to change in progress shows sharp incrementation among children, reaching a peak at about seventeen years of age, and a linear declining function of age among adults (Labov 2001, Tagliamonte & D'Arcy 2009).

Based on the above mention rationale, I therefore divide the 20 participants in two age groups: under 17 groups, and over 17 groups. Table 1 & 2 provide the grouping of the participants.

Table 1: under 17 groups

No.	Name	Gender	Age of Arrival	Length of Residency	Current Age
1.	Honey	Female	10	12	22
2.	Mona	Female	9	13	22
3.	Amino	Female	16	4	20

4.	Naima	Female	5	15	20
5.	Fahma	Female	14	10	24
6.	Osman	Male	15	12	27
7.	Hamid	Male	12	13	25
8.	Aynab	Male	4	20	24
9.	Sadiq	Male	16	6	22
10.	Habib	Male	10	21	31

Table 2: over 17 groups

No	Name	Gender	Age of Arrival	Length of Residency	Current Age
1.	Asma	Female	22	2	24
2.	Munira	Female	26	13	39
3.	Habon	Female	21	2	23
4.	Ilhan	Female	25	12	37
5.	Istar	Female	19	6	25
6.	Abdulkarim	Male	19	10	29
7.	Ryan	Male	27	17	44
8.	Abdirizaq	Male	27	13	40
9.	Mumin	Male	19	19	38
10.	Asker	Male	20	2	22

Material

The researcher will first select target phonemes that include the stops in English consonants.

The word list will include words that each begins with a voiceless bilabial stop [p] and a voiced [b]: a voiceless alveolar stop [t] and a voiced [d]: a voiceless velar stop [k] and a voiced [g]. In addition, the words in each consonant group will contain the same vowel [/ a/].

For illustrations of the target words, see Table 4 below. A digital recorded will be used to conduct the recording throughout all the recording intermissions.

Table 3: List of Words and Segments

NO.	Selected Target Words
1.	/p/ the phoneme spelled <mathbf{p}> in <pad>: voiceless bilabial stop
2.	/b/ the phoneme spelled <mathbf{b}> in <bad>: voiced bilabial stop
3.	/t/ the phoneme spelled <mathbf{t}> in <tad>: voiceless alveolar stop
4.	/d/ the phoneme spelled <mathbf{d}> in <dad>: voiced alveolar stop
5.	/k/ the phoneme spelled <mathbf{c}> in <cad>: voiceless velar stop
6.	/g/ the phoneme spelled <mathbf{g}> in <gad>: voiced velar stop

Each person will pronounce a word containing the segment under consideration 36 times. The importance of this task is to elicit the correct phonemes from the participants in an isolated context. An emphasis was placed on drawing specific phonemes initially.

Procedure

The participants were recorded producing words in their citation forms, which contain the segments [p, b, t, d, k, g] in the initial position. Each participant pronounced a word containing the segment under consideration 36 times in an isolated context. The total number of tokens for this task is 720, that is, (20 x 3 x 12). All 20 participants pronounced each word three times. All participants produced all the target words. Figure 1 gives an example of the three repetitions of the word <pad>.

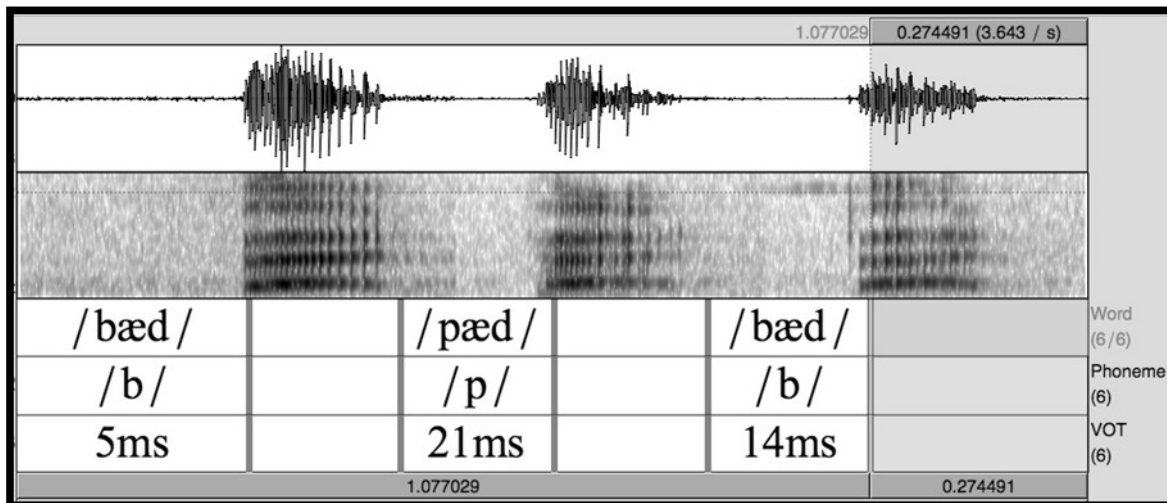


Figure1: Sample Data

The recordings will be done on a digital tape recorder in a quiet room. The participants will be asked to pronounce each word as naturally as possible. The recorded data will be analyzed using Praat, online acoustic analysis software.

Data analysis procedure

A wideband spectrograms and waveforms was produced for each stop consonant: /p/ /b/, /t/, /d/, /k/, /g/, in confined words in word initial prevocalic position using an advanced software called Praat. An acoustic analysis of the each segment was produced according to place of articulation. The presence or absence of glottal pulsing in stop closure was completed for each stop segment by utilizing Praat. First, the VOT for voiceless stops /p, t, k/ was measured from the start of the release burst to the mark at which the waveform ends following the boundary in forming the first periodic cycle. Then, the VOT for voiced stops /b, d, g/ was measured from the beginning of the first periodic cycle in the closure period to the beginning of the release burst. Next, mean VOT and standard deviation was computed for each participant. Thereafter a statistical analyses and scatterplots was computed by using IBM's SPSS Statistics 19 software, and Excel 2010 to format the tables. Finally to assess the

effect of LOR and AOA on the acquisition of the STOP consonants, a correlation test was conducted. It is worth mentioning that a regression test was also conducted in an attempt to develop further support of the correlation test.