

## The Role of Speaker Ethnicity in the Variation of /tʕ/ in Aswan Arabic<sup>1</sup>

Jason Schroeffer

Virginia Military Institute

### ملخص:

لقد أثبتت أبحاث سابقة أن الأقليات المحلية في المجتمعات العربية قد تتأقلم مع لهجات الأكثريات التي تهاجر إلى المناطق التي تسكن فيها تلك الأقليات. وتقدم مدينة أسوان في جنوب مصر مثلاً لتلك الحالة بما أن الأكثرية الصعيدية قد هاجرت ومازالت تهاجر إلى مدينة أسوان التي تُعتبر جزءاً من وطن الأقلية النوبية. ومع أن مدينة أسوان تسكنها جاليات إثنية متعددة، فما زالت لم تحظ بتوثيق لغوي كافٍ. وبالتالي لا بد من القيام بوصف صوتي لحرف الطاء وإمعان النظر في تأثير عوامل سوسiolسانية مثل الإثنية على التنوع اللغوي بالإضافة إلى مقارنة نتائج هذا البحث بنتائج أبحاث سابقة. ويكشف هذا البحث عكس ما اكتشفته الأبحاث السابقة لأن النوبيين الناطقين بالعربية والصعيدية يختلفون تماماً في لفظ صوت الطاء. وبناء على هذه النتائج تطرح هذه المقالة أن الهوية الإثنية كما يعزوها الأسوانيون لأنفسهم بمثابة تعريف آخر لهذا العامل السوسiolساني. وتختتم هذه المقالة بتفسير بعض الأحداث التاريخية التي أدت إلى هذه الأنماط السوسiolسانية في مدينة أسوان.

### Abstract:

Scholarship has demonstrated that indigenous minority groups can converge towards the dialects of an immigrating majority. Aswan presents an analogous situation with the indigenous minority Nubians and majority *Šaʿīdīs*. The multiethnic community therein remains an underdocumented variety of Arabic in the south of Egypt. This requires a three-pronged approach: describing the acoustics for the realizations of /tʕ/, studying the role that relevant factors like ethnicity play in the sociophonetic variation of /tʕ/, and comparing the linguistic patterns to previous scholarship. The results reveal that /tʕ/ varies significantly for the Nubians and *Šaʿīdīs* in Aswan. This suggests that self-ascribed ancestry in southern Egypt represents an additional way to operationalize ethnicity as a sociolinguistic variable. This paper finds that the minority group in Aswan does not converge to the majority pronunciation patterns unlike previous research in the field. The paper concludes with a discussion on how recent events in Aswan gave rise to these linguistic patterns.

Keywords: Upper Egypt; Aswan Arabic; ethnicity; identity; sociolinguistics

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## 1. Introduction

### 1.1 Overview

In-migrating majority ethnic groups can induce minority indigenous groups to converge to the dialects of the majority due to their status and economic opportunity (cf. Holes, 1983, 1995). This article claims that the minority Arabic-speaking Nubians of Aswan do the opposite; using their own realizations of /tʕ/ to carve out an identity for themselves amongst the majority Ṣaʿīdīs. This paper also supplies the field of Arabic dialectology with new acoustic data for Aswan Arabic. It additionally contributes to Arabic sociolinguistics by adding to the field's understanding of the sociolinguistic variable of ethnicity.

Aswan lies some 1000 kilometers south of Cairo, approximately 350 km north of the Sudanese border as Figure 1 illustrates. Upper Egyptian (southern Egyptian) varieties of Arabic are estimated to be spoken in language communities extending from just south of Cairo along the Nile to Aswan and comprise 19 million people (see Lewis, Simons, and Fennig, 2018). Aswan contributes approximately 1.2 million of those speakers, which constitutes approximately 7% of the total population of Upper Egyptian Arabic speakers (Aswan Census, 2006).<sup>2</sup>



Figure 1: Map of Egypt

Two self-identifying and historically marginalized groups in Egypt constitute the majority of residents in Aswan: The Nubians and the Ṣaʿīdīs.<sup>3</sup> The majority and locally influential group is the Ṣaʿīdīs, who claim Arab ancestry. They may have inhabited Upper Egypt and Aswan as early as the 7th century C.E. during the Arab conquests of Egypt. Since the completion of the High

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<sup>2</sup>The 2016 Egyptian census is still in progress and has not yet been published.

<sup>3</sup>Other ethnic groups reside in Aswan; however, this study only considers these two large ethnic groups.

Dam in the 1960's, many Ša'īdīs have also migrated from surrounding rural areas to settle in Aswan to take advantage of the growing economic opportunities the city has to offer (cf. Aswan Census, 2006). Aswan enjoys a burgeoning tourism industry, chemical fertilizer plants, and granite quarries (cf. Pratt, 2007).

Ša'īdīs also represent a marginalized group in Egypt more broadly. First, they tend to be poorer and gravitate towards agricultural jobs, such as the cultivation of sugarcane (Hopkins, 2003). Lila Abu-Lughod (2005:57) notes that the Egyptian media stereotype of Ša'īdīs characterizes them as violent and dumb peasants. Her ethnographic work in Luxor certainly paints a more complex picture than popular media portrayals (2005:71, 74). She finds that they are often resourceful and sophisticated by virtue of their intimate local knowledge and exposure to school and television. She further describes the Ša'īdī women as cosmopolitans, while her consultants outline qualities of toughness and skill as masculine Ša'īdī traits. Participants in Miller's (2005) study similarly characterize themselves as a 'tough' people. During the sociolinguistic interviews this paper draws on, the Ša'īdīs interviewed self-identified as Ša'īdī, an Arab ethnic group and stated that their dialects are *hišin* 'tough', *bi-taḍḥīm* 'exaggerated', and *šadīd* 'severe'.

The Nubians are the minority in Aswan and constitute a less politically influential group. They have called the region known as Nubia, which spans the area from Wadi Halfa in Sudan to Elephantine Island in Aswan, their traditional homeland since at least the 8th century B.C.E. (see Fahim, 1983:9, 23). Arab tribesmen who were militarily superior to the Nubians often married the African Nubian women around the time of the conquests in the 8th century C.E. (see Hasan, 1967:127). Currently, however, the Nubians practice endogamous marriage patterns (Rouchdy, 1991; Fahim, 1983:17). The Nubians in Egypt customarily have spoken the Matoki dialect of the Nubian language, which belongs to the Nilo-Saharan language family (Abdel-Hafiz, 2009; Rouchdy, 1991). Nubian is a minority language in Egypt that has been in contact with Arabic for several centuries. Many Nubians are bilingual in Arabic and Nubian, however the younger generations are increasingly becoming monolingual Arabic speakers (cf. Lewis et al., 2018; Hopkins, 2003:32; Rouchdy, 1991).

From 1902 to 1964, the Egyptian government successively and increasingly displaced the Nubians with dam projects that aimed to control the annual flooding of the Nile and supply the country with more electricity (Fahim, 1983:26). This forced the Egyptian Nubians to be resettled

in Aswan, Komombo, and other neighboring areas as the High Dam flooded most of the Nubian people's traditional homeland, creating Lake Nasser. The Egyptian government resettled this indigenous minority in the same communities as the majority Ṣa'īdīs. The dispossession of most of their homeland, and the close contact with the dominant Ṣa'īdīs, has caused many Nubians to fear the loss of their values, language, and customs (Rouchdy, 1991:9).

Observations from Nubian consultants that I interviewed in Aswan revealed self-descriptions that differed from their Ṣa'īdī neighbors. One consultant called Nubians and their way of speaking Arabic *nā'im* 'soft,' in the sense that it is 'soft like the Nile.' Others consistently described themselves and their way of speaking as *'ādī* 'normal,' especially when compared with Cairenes or their overly 'tough' Ṣa'īdī counterparts. The Nubian consultants indicated that they strongly identify as Nubian and African in contrast to the Ṣa'īdīs.

The indigenous minority Shī'a and majority Sunni newcomers of Bahrain present a similar situation. Clive Holes' comprehensive scholarship (1980, 1983, 1987, 1995) investigated several phonological and morphosyntactic dialectal features that were traditionally bifurcated as a function of speaker sect. The Shī'a exercised endogamous marriage patterns and lived in isolated communities that focused on certain professions e.g. pearling, pottery, and agriculture to name a few. The politically dominant and majority Sunni migrated from the Gulf coast of the Arabian peninsula to Bahrain during over the last 200 years or so. The discovery of oil and the emergence of the aluminum industry changed the social dynamic and relative isolation of the Shī'a and Sunnis (Holes, 1995:273). The result was the two groups experienced increased contact with one another, particularly in urban centers, to take advantage of the new economic opportunities. This in turn caused these two dialects to level, but heavily in favor of the majority Sunni features (Holes, 1995). This paper argues that in spite of these similar social dynamics, the minority Nubians are not converging to the majority Ṣa'īdīs' realizations of /tʰ/; instead they are using their own pronunciations.

## 1.2 Upper Egyptian Linguistics

Upper Egyptian Arabic includes the regions along the Nile from just south of Cairo to Aswan (Lewis et al., 2018). Behnstedt and Woidich (1985b) describe salient local variants of this region in their dialect maps. Their research, like many other studies in dialectology, revolves around non-mobile, urban, old, rural males ("NORMs") (cf. Chambers and Trudgill, 1998).

Smaller studies have sketched dialect maps of a handful of other villages near Asyut and north of Aswan (see Khalafallah, 1969 and Nishio, 1994 for two examples). Winkler (1936) also documented some linguistic features in the village of West Aswan in the 1930s, then a small hamlet outside of the city of Aswan. My previous work on Aswan Arabic (Schroepfer, 2016) describes some phonetic variation of /tʰ/, but does not consider the impact of factors that may distort the descriptions of the Ṣaʿīdīs' and Nubians' pronunciation such as particular individual speakers' excessive inclination towards certain pronunciations or particular lexical items that intrinsically demonstrate a set pronunciation.

Previous studies of Upper Egyptian Arabic are thus essentially dialect geographies and grammars that focus on points of linguistic variation among small rural villages instead of large urban centers like Aswan. Only one of them acoustically describes a feature in the dialect of Aswan (see Schroepfer, 2016). This paper aims to contribute to the documentation of this understudied region by building on the previous acoustic description of the phonetic variation in Aswan Arabic with new techniques that more accurately document the sound and its variation.

The region of Upper Egypt remains understudied from a sociolinguistic standpoint. In addition to my previous work (2016), Miller has published two important articles on the region. Her (1998) survey conducted in Cairo finds negative attitudes towards Upper Egyptian Arabic indicating its lower status in Egypt. She (2005) also undertook a linguistic accommodation study of Upper Egyptian migrants in Cairo in which she led sociolinguistic interviews with seven migrant workers originally from the Gena-Sohag region, which is about halfway between Asyut and Aswan on the Nile (see Figure 1). She compares Cairene Arabic with the migrants' variety through several linguistic features other than /tʰ/, creating a ratio of the amount of Cairene productions divided by the total realizations of a given feature to reveal the level of accommodation to Cairene Arabic.<sup>4</sup> She finds that Upper Egyptians in Cairo first tend to accommodate slowly to function words. This challenges the work of Trudgill (1986), which concluded that linguistic accommodation usually occurs first in the phonological and lexical components, and then the function words.

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<sup>4</sup>Miller's study considered /tʰ/ at first, but then ultimately omitted it. She examined variation in: /æ:/, /g/, long vowel shortening before -CC, raising of final -a, elision of /i/ in unstressed syllables and the insertion of epenthetic vowel, disjunctions of final clusters if C=R (i.e. l,m,n,r), stress, vocalization of adjectival patterns, vocalization of verbal forms in the perfective and imperfective, 3rd person feminine perfective suffix forms, vocalization of imperfective inflection, verb form alternations, 1st person singular and plural imperfective verb paradigms, personal pronouns, demonstratives, interrogatives, genitive exponent forms, indicative morpheme forms, participle negation strategies, and lexical items.

In short, her studies provide us with some preliminary information about the generally marginalized status of Upper Egyptian Arabic. However, these research projects were not conducted in Upper Egypt itself. With the exception of one study (see Schroepfer, 2016), the field lacks a body of sociolinguistic research of Upper Egyptian Arabic that has been carried out in Upper Egypt. Additionally, no other studies of Arabic as spoken by the Nubians in the Aswan area exist.

### 1.3 The Sociophonetic Variable /tʕ/

The preeminent Arab grammarian Sībawayhi first described /tʕ/ as having voiced and voiceless variants in the 8th century C.E. (see ed. 'Abu Bashār 'Amr ibn 'Uṯman, 1898). It is generally classified as a voiceless sound in the vast majority of dialects. However, at least Nigerian Arabic has proven to have a voiced variant of /tʕ/ (Owens, 1993:19–23). Little research has been done on the evolution of these variants until recently.

This sound needs more research since at least one study has shown that it can vary by speaker sex and it has many acoustic realizations (see Khattab, Al-Tamimi, and Heselwood, 2006 for the study on speaker sex). In addition to the voiced and voiceless realizations of /tʕ/ mentioned above, several scholars report the existence of a simultaneously emphatic and glottalized variant of /tʕ/ in several villages just north of Aswan. Behnstedt and Woidich (1985b) claim that speakers can produce a glottalized pronunciation from Asyut to just north of Aswan (see Figure 1). Khalafallah's (1969:29) attempts to analyze the distribution of the two allophones of /tʕ/ in the small villages of 'Izbit Il-Būsa and Il-'Ukaliyya near Asyut led to his conclusion that:

[tʕ] and [tʕ̤]<sup>5</sup> are in complementary distribution in the following environments of [s] and [z]...On the basis of my corpus, the following observations may be made.

1. [tʕ] and [tʕ̤] are partially in complementary distribution.
2. Whenever [tʕ̤] occurs, it can be replaced with [tʕ] without the least distortion of speech.
3. A Ṣa'īdī speaker uses [tʕ] in all environments in certain social circumstances (e.g., speaking to Lower Egyptians). If in the same circumstances he [sic] uses [tʕ̤], it will be with the purpose of showing he is Ṣa'īdī. [tʕ̤], then is a stylistic allophone of /tʕ/.

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<sup>5</sup>This sound is both pharyngealized and glottalized.

This earlier work suggests that even four decades ago, this feature was sociolinguistically salient to southern Ṣaʿīdī speakers in the villages of Upper Egypt, particularly when addressing northern Egyptians.<sup>6</sup>

Nigerian Arabic is also known to have a similar phonological distribution for /tʰ/ that also has sociolinguistic salience in the Nigerian context. This dialect is the only other known variety of Arabic containing an implosive [ɗ] realization for /tʰ/. Owens (1993:19–23) records that speakers produce an implosive [ɗ] as a variant/allophone of /tʰ/ and it is devoiced in the pausal form. However, sometimes speakers with knowledge of MSA will pronounce it as [tʰ] in careful speech, syllable initially. In other words, speakers of this dialect demonstrate prevocalic sociolinguistic variation, with [tʰ] carrying salience that is linked to a register that appears prestigious.

I posit that Aswan Arabic exhibits analogous phonological and social variation for /tʰ/, but in Aswan the social variation is due to ethnic identity. Phonologically, I observe that the implosive [ɗ] occurs in Aswan Arabic prevocally.<sup>7</sup> The voiceless [tʰ] is also in variation with the implosive [ɗ] in the prevocalic position. If these statements about [ɗ] are true for Aswan Arabic, then it should contain VOT lag, while [tʰ] should display slight VOT lead. This article brings some new acoustic data to bear on these variable pronunciations in Aswan Arabic. The social variation of the variable /tʰ/ is discussed in the next section.

#### 1.4 Ethnic Identity and the Pronunciation of /tʰ/ in Aswan Arabic

Nubians perceive differences between their own pronunciations of [tʰ] < /tʰ/ and the Ṣaʿīdīs when they speak Arabic. They believe that their production of [tʰ] < /tʰ/ can be realized similar to the phoneme /t/, as the following excerpts from the sociolinguistic interviews of this study show:

1. *in-nūbiyyīn bi-yinṭagū*                      *t-tā*                      *tē*  
the-Nubians IND-pronounce.3PL the-[tʰ] </tʰ/ /t/  
‘The Nubians pronounce [tʰ] </tʰ/ as /t/.’

<sup>6</sup>It is noteworthy that the Nubians were concurrently being resettled to nearby Upper Egyptian villages in the 1960s.

<sup>7</sup>Although a voiceless implosive is classified as voiceless, it still has VOT lead (cf. Ladefoged, 1979).

2. *iṭ-ṭā' mumkin ti-glab tē fi-kalām-na*  
 the-[tʰ] < /tʰ/ can 3FSG-turn.into /t/ in-speech-1PL

‘The [tʰ] < /tʰ/ can turn into a /t/ in our speech.’

One Nubian consultant even called this phenomenon a form of ‘exaggeration’ as the quote below shows:

3. *in-nūbiyyīn mumkin ti-lāgī l-‘arabī btah-ḥum fī-h taḍḥīm*  
 the-Nubians can 3FSG-find the-Arabic GEN.MSG-3PL in-3MSG exaggeration  
*misalan maḥaṭṭa yi-gūl-ha maḥaṭṭa bi-t-tē*  
 for.example station 3MSG-says-3FSG station with-the-/t/

‘The Nubians, you might find their Arabic has some exaggeration. For example, he says *maḥatʰ:a* [station] as *maḥat:a* with a /t/.’

This is noteworthy since the Nubian consultant claims his pronunciation of the emphatic /tʰ/ is realized like /t/. By ‘exaggeration’ the consultant may be perceiving a more aspirated variant of /tʰ/ for the Nubians in relation to the Ṣaʿīdīs.

Acoustically, [tʰ] < /tʰ/ and /t/ do actually differ in VOT for many dialects of Arabic (cf. Al-Ani, 1970:44-45; Odisho, 1973:53-54; Bukshaisha, 1985:228; Al-Nuzaili, 1993:75). Khattab et al. (2006) found that [tʰ] < /tʰ/ in Jordanian Arabic contains approximately 22ms VOT lag, while /t/ on the other hand is aspirated with approximately 38ms lag. In other words, /t/ is a sound with considerably longer aspiration than [tʰ] < /tʰ/ in many varieties of spoken Arabic. Consequently, I hypothesize that the Nubians’ pronunciations of [tʰ] < /tʰ/ may be more aspirated and contain higher VOT lag than the Ṣaʿīdīs’ pronunciation of [tʰ] < /tʰ/.

The Ṣaʿīdīs report that they additionally produce [ḏ] < /tʰ/ more often than the Nubians in that they make /tʰ/ “emphatic” as the following comment illustrates:

4. *‘aṣḏān<sup>8</sup> yi-faḥḥim l-ak iḏ-ḏā’*  
 Thirsty 3MSG-makes.emphatic for-2MSG the-[ḏ] < /tʰ/

‘Thirsty [with a [ḏ] pronunciation].’ [The Ṣaʿīdī makes the [ḏ] < /tʰ/ emphatic.]

This comment suggests that the consultants perception of an ‘emphatic’ realization of this may actually refer to the voiced variant [ḏ] < /tʰ/ for the Ṣaʿīdīs. This comment also suggests that the Ṣaʿīdīs imply that [ḏ] < /tʰ/ constitutes a more common realization for them and a less

<sup>8</sup> ‘aṣḏān ‘thirsty’ is a metathesis of /‘aṣṭān / in many Upper Egyptian dialects, including Aswan Arabic.



common one for the Nubians. Interestingly, the Ša‘īdīs also indicate that this specific realization of /tʰ/ represents a stigmatized pronunciation in Aswan and possibly throughout Egypt:

5. *fīh nās bi-ti-taryag ‘ala q̣-q̣ā’*  
 EXIS people IND-3FSG-make.fun on the-[q̣] < /tʰ/  
 ‘There are people who make fun of the [q̣] < /tʰ/.’

From these comments, I hypothesize that the Ša‘īdīs’ pronunciations of /tʰ/ will have lower VOT than the Nubians’.

In summary, this study will argue that /tʰ/ > [tʰ] and [q̣] occur prevocally. If this is true, then [q̣] < /tʰ/ should demonstrate VOT lead, while [tʰ] < /tʰ/ should contain VOT lag (H<sub>1</sub>). I also hypothesize that the Nubians will show more overall VOT lag than their Ša‘īdī counterparts based on metalinguistic comments that the voiced [q̣] < /tʰ/ is more common for Ša‘īdīs and that [tʰ] < /tʰ/ appears more aspirated like /t/ for the Nubians (H<sub>2</sub>). I also therefore theorize that the Nubians’ pronunciation of [tʰ] < /tʰ/ will demonstrate longer VOT lead than the Ša‘īdīs’ respective pronunciation (H<sub>3</sub>).

## 2. Method

### 2.1 Data Collection

A total of 31 sociolinguistic interviews were conducted by the author, a non-native yet fluent speaker of Arabic, lasting anywhere from 15 minutes to approximately two hours. The average interview ran about 45 minutes. I undertook some of the interviews with the consultants on a one-on-one basis. Several, if not most, however, were between me and one or two designated interviewees with a group of other friends and relatives present during the interview process. This was done for the purpose of creating as natural a setting as possible, which was especially important in light of the fact that I was studying a stigmatized sociophonetic variable.

I used two different types of questionnaires for the interviews. The first recordings, conducted during the spring of 2012, utilized picture cues of highly variable lexical items to prompt speech in order to ascertain whether or not certain features were present in Aswan, since the urban dialect had remained undocumented to that point. Many of the conversations that stemmed from these cues led to discussion about food, cooking recipes, the gas crisis in Upper Egypt, and comparing life in Aswan to other places. The main point of these interviews was to

collect natural speech, explore key features of the dialects, and identify the sociolinguistic variable in this study.

The second questionnaire was designed to elicit natural speech from the sociolinguistic interview (following Labov, 1984:35). The typical sociolinguistic interview can contain portions with minimal pairs, word lists, a reading passage, and a free, natural interview (Labov, 2001). This study opted to only utilize natural interviews because the Aswan vernacular is also used alongside MSA in Aswan. Thus, the inclusion of reading tasks might have unintentionally elicited MSA responses and not the local vernacular. In addition, some of the consultants in this study were functionally illiterate or unable to read at all. If the interview contained a reading component to it, they would not have been able to participate in those portions. I used this questionnaire during the winter of 2014-2015 and spring of 2015. It comprises seven thematic units, which include demographic information, childhood games, marriage, fights, dreams, near death experiences, and metalinguistic commentary.

## **2.2 Research Sites**

After approximately a month of participant observation in the speech communities of Aswan, I was able to pinpoint three good research locations to investigate the relevant sounds and factors. The first site that I selected was the University of Aswan. I chose it in order to conduct interviews with young *Ṣaʿīdī* speakers. It was quite difficult for me to conduct interviews with women, in particular young women, because Upper Egypt can be a conservative society, even in the city of Aswan (cf. Miller, 2004). The university setting offered an optimal venue to overcome this challenge, since all of the interviews were supervised and conducted in classroom settings.

The second site that I singled out was the market or *sūg* along the Nile in the city of Aswan because one can find consultants of different ages, sexes, and ethnicities there. It was a good locale to build connections with middle aged to older *Ṣaʿīdī* men. Many of the interviews occurred in small shops and restaurants.

The last site I selected was Elephantine Island or *zazīrit aswān* ‘Aswan Island,’ as the local residents call it. Because this location encompasses part of the traditional Nubian homeland, or ‘Old Nubia’ (cf. Fahim, 1984:9-10), I was able to become acquainted with Nubian men and women of varying ages. All three sites had quiet indoor and semi-indoor places to record and were less than 10 km apart.

## 2.3 The Variables

The dependent measure for this study is VOT. Speaker sex was self-identified by each consultant and consistently aligned with their perceived biological sex. Speaker ethnicity was also self-identified by each consultant and no participant simultaneously identified as both Nubian and Ša‘īdī. All of the Nubians were fluent speakers of Arabic. Their functional proficiency in Nubian is unknown, but they all rated their own abilities in Nubian as poor. Age is also self-reported by each speaker. I auditorily encoded the different allophones of /tʰ/, which are [tʰ] and [qʰ]. I call this phonetic variable ‘phone’ in section 3.

## 2.4 Data

A total of 31 speakers of Aswan Arabic and approximately 30 hours of digital recordings comprise the corpus of this study. I used Marantz PMD 661 and Tascam DR-100MKII recorders and Shure SM10A head-mounted microphones. The conversations were digitally recorded as .wav files with a 48000 khz sampling rate. It is important to note that there are some imbalances in the sample of speakers, as Table 1 shows.<sup>9</sup> The Ša‘īdīs are well-represented until about 40 years of age. However, there are only two 42-54 year-old Ša‘īdī speakers. The Nubians include only three young consultants (18-19 years old), while one is 32 years old, and the remaining seven are 42-54 years old. In other words, the Nubians tend to be older, while the Ša‘īdīs are generally younger in this sample. I consequently do not run age as a main effect.

Table 1: Consultants by Age, Ethnicity, and Sex

	Ša‘īdī		Nubian	
Age	Female	Male	Female	Male
18-28	4	10		3
30-40		3		1
42-54		2	2	5
Total	4	16	2	9

<sup>9</sup>The political circumstances in Egypt have prevented me from returning to the field in Aswan to obtain supplementary data. Additionally, the Egyptian government has recently made obtaining permission to conduct linguistic field work very difficult.

## 2.5 Measurements and Confounding Factors

The implosive [ɖ] and the voiceless alveolar stop [tʰ] differ acoustically in the voicing dimension since [ɖ] is a voiced consonant, while [tʰ] is voiceless. Therefore, I have chosen to measure all of the variables as a function of VOT. Voicing is defined as the first sign of periodicity in the waveform in relation to the stop release (Lisker and Abramson, 1967).

Several factors can influence VOT measurement. Stress can influence VOT values by increasing the lag and lead of VOT (Lisker and Abramson, 1967). I tested the effect of stress on this data set by performing two two-tailed t-tests. The results for [tʰ] and [ɖ] in Table 2 reveal no statistically significant difference, which indicates that stress is not significantly affecting this data.

Table 2: The effect of Stress on [tʰ] and [ɖ]

	Mean VOT	Standard Deviation	d.f.	t value	p value
[tʰ] stressed	20.711	8.262	470.461	.178	.859
[tʰ] unstressed	20.72	9.355			
[ɖ] stressed	-25.28	15.903	50.053	.682	.499
[ɖ] unstressed	-23.184	15.736			

Since stress does not affect this data set, I used stressed and unstressed tokens for the analysis. Inter-rater reliability of auditory encodings can also affect measurement results. Therefore, I randomly chose 25 tokens and asked a colleague who is a native speaker of Arabic to evaluate phone encodings and VOT measurements. We reached 100% consensus on the encodings and measurements. Gemination and poor quality recordings can also affect VOT measurements. I started with 1161 tokens and omitted 210 of them because of gemination and poor quality. This left 951 tokens for the analysis.

## 3. Results

I used R version 3.4.1 with the lmer4 package to employ a stepwise process to fit three separate mixed effects models. I did this because sex was not a significant factor. Only phone and ethnicity were significant factors. The tokens of these analyses are distributed as table 3 below shows:

Table 3: Descriptive Data for [tʰ] and [d] Realizations of /tʰ/

	[tʰ] (n = 789)	[d] (n = 162)
Şa'īdī	192	104
Nubian	617	58
951 total tokens		

The first mixed-effects regression model that I fit was for VOT as a function of phone to examine whether or not the auditory encodings of [tʰ] and [d] actually differ in terms of VOT. It reveals a highly significant effect for phone ( $\chi^2(1) = 860.63$ ,  $p = 2.2 \times 10^{-16}$ ). There was no effect for speaker or lexical item (approximately 4 tokens for each word). In other words, individual speakers and words did not significantly skew the phone results. Table 4 shows these results.

Table 4: VOT Mixed Effects Results for Phone

Fixed Effect	VOT	Estimate Std. Error	d.f.	t value	p value
Intercept	-22.942	6.071	1	3.623	<.001
<b>Phone [tʰ]</b>	<b>41.416</b>	<b>4.850</b>	<b>1</b>	<b>-2.958</b>	<b>.005</b>
Random Effect	Variance		ICC <sup>10</sup>	Std. Dev	
Lexical item	3.396		3.2%	1.843	
Speaker	22.416		20.1%	4.735	
Residual	81.235		76.7%	9.013	
<b>N = 951; Lexical Item = 251; Speakers = 31</b>					

As Figure 2 indicates, the voiceless [tʰ] demonstrated a VOT lag ( $M = 18.475 \pm 1.042$ ms standard error) while [d] shows a VOT lead ( $M = -22.942 \pm 1.312$ ms standard error). It is clear that [tʰ] is voiceless while [d] is voiced. Thus, my first hypothesis is supported by the data.

<sup>10</sup>This is a ratio of the variance for a given factor divided by the total variance.

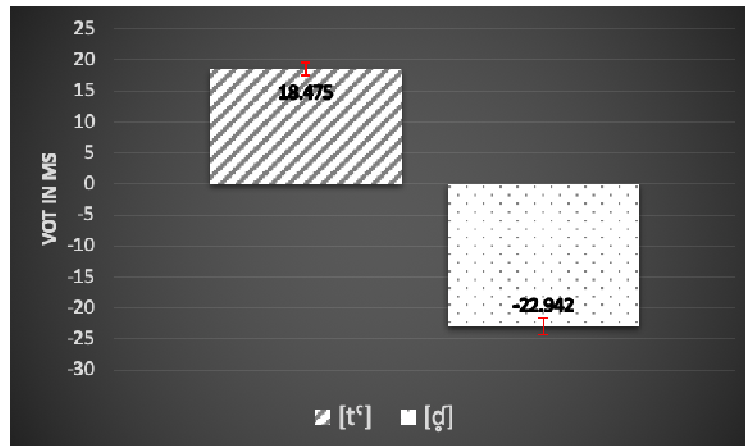


Figure 2: Realizations of /tʰ/ by Phone

The figures below supply some examples with VOT measurements in the waveforms for [tʰ] < /tʰ/ and [ɖ] < /tʰ/. The measurement intervals are marked by 2 perforated vertical lines extending above [tʰ] and [ɖ] in the tier below. Figure 3 displays approximately 20ms of lag in *tʰiʃl* ‘child’ for [tʰ], while figure 4 demonstrates approximately 25ms of lead in *ʃaʃdæ:n* ‘thirsty’ for [ɖ].

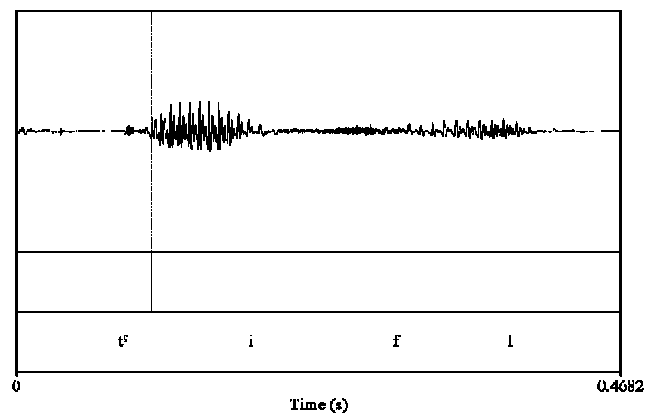


Figure 3: Waveform of [tʰ] < /tʰ/ with approximately 20ms of lag

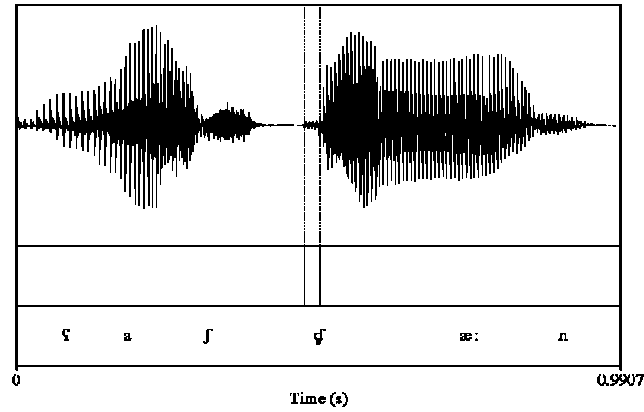


Figure 4: Waveform of [d̥] < /t̥/ with approximately 25ms of lead

I fit a mixed effects linear regression model to predict VOT as a function of ethnicity. Age did not demonstrate significant predictability because of its multicollinearity with ethnicity and thus was omitted as a main effect in the model. As the table below shows, only speaker ethnicity reports a significant effect. The random effects of lexical items (around 4 tokens per item) do not skew the data, while individual speakers do account for about 45% of the experiment's variance. I ran a nested model comparison against a model without the random speaker intercept and it found that the speaker random effect is significant ( $\chi^2(1) = 295.9$ ,  $p = 2.2 \times 10^{-16}$ ). The model with the speaker random effect (Akaike Information Criteria (AIC) = 7820.1, Bayesian Information Criteria (BIC) = 7849.2) is better than the one without it (AIC = 8114.0, BIC = 8138.3). The AIC and BIC are used to select optimal mixed effects models and the models with AIC and BIC values closer to 0 are preferable. This supplies ample justification to confidently interpret the fixed effects.

Table 5: Mixed Effects Results of All Realizations of /t̥/ by Ethnicity

Fixed Effect	VOT	Estimate Std. Error	d.f.	t value	p value
Intercept	17.463	3.814	1	4.579	<.001
Ethnicity (Şa'ıdī)	-14.494	4.946	1	-2.931	.005
Random Effect	Variance		ICC	Std. Dev	
Lexical item	36.19		9%	6.016	
Speaker	187.67		46.7%	13.699	
Residual	177.62		44.3%	13.328	
N = 951; Lexical Item = 251; Speakers = 31					

The model in table 5 above revealed a significant effect for speaker ethnicity ( $\chi^2(1)=7.879$ ,  $p=.005$ ). The Nubians' ( $M= 17.463 \text{ } \pm 3.814\text{ms}$  standard error) VOT is significantly longer than the Şa'īdīs' ( $M = 2.969 \text{ } \pm 3.478\text{ms}$  standard error) just as hypothesized ( $H_2$ ). Figure 5 below shows this dynamic. This difference is in part due to the fact that the Nubians account for just 58/162 (36%) of the voiced [d] tokens, while the Şa'īdīs are responsible for the remaining 104 (64%) [d] tokens. It therefore seems likely that the Nubians pronounce [tʰ] < /tʰ/ with more aspiration, or 'exaggeration' as example 3 states, than their Şa'īdī counterparts.

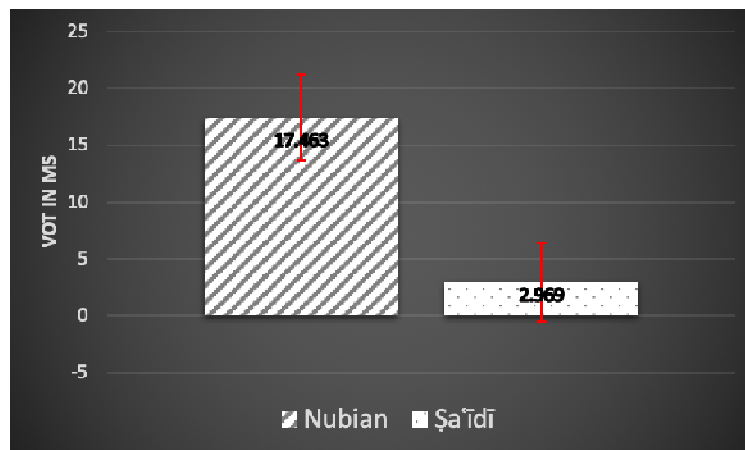


Figure 5: All Realizations of /tʰ/ by Ethnicity

In order to see if the two ethnic groups differ in their productions of [tʰ] < /tʰ/, I examined VOT as a function of ethnicity for just the voiceless [tʰ] < /tʰ/ encodings with another mixed-effects model. Two Şa'īdī males (23 and 32 years old) were excluded from this analysis because they only produced [d] tokens, leaving just 29 speakers. This is why I ran this linear mixed effects model separately. For the 789 tokens of [tʰ], it reveals a significant difference for ethnicity ( $\chi^2(1)=19.436$ ,  $p=1.041 \times 10^{-05}$ ). As the table below shows, only speaker ethnicity reports a significant effect. The random effects of lexical items (about 3 tokens per word) and speakers do not account for the majority of the variation; the fixed effects do.



Table 6: Mixed Effects Results for [tʰ] by Ethnicity

Fixed Effect	VOT	Estimate Std. Error	d.f.	t value	p value
Intercept	22.892	1.239	1	18.471	<.001
Ethnicity (Şa‘īdī)	-7.787	1.706	1	-4.564	<.001
Random Effect	Variance		ICC	Std. Dev	
Lexical item	11.16		16.3%	3.340	
Speaker	16.13		23.6%	4.017	
Residual	40.99		60.1%	6.402	
N = 789; Lexical Item = 233; Speakers = 29					

The Figure below demonstrates that the Şa'īdīs' (M=15.105 +/- 1.271ms standard error) pronunciation of [tʰ] < /tʰ/ is approximately 8ms less than Nubians' production (M=22.892 +/- 1.239ms standard error) of [tʰ] < /tʰ/. This is a noticeable difference to the human ear.

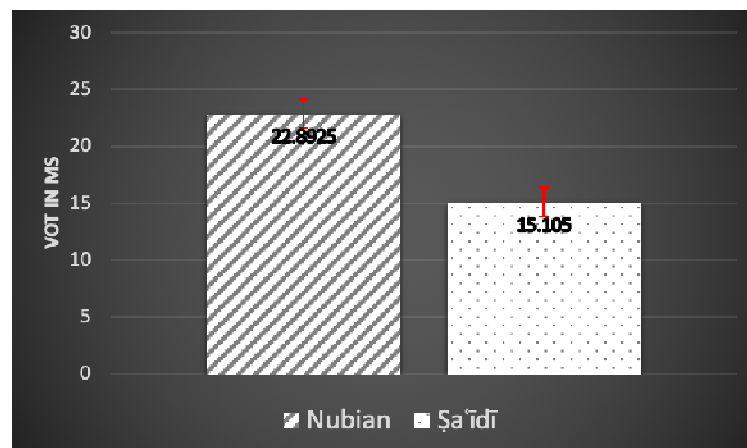


Figure 6: Realizations of [tʰ] < /tʰ/ by Ethnicity

Figures 7 and 8 below furnish some examples with VOT measurements in the waveforms for [tʰ] < /tʰ/ for both ethnic groups. The measurements are noted by 2 perforated vertical lines extending above [tʰ] from the tier below. Figure 7 displays approximately 20ms of lag in the Nubian production of *tʰabʕan* ‘of course’ compared to figure 8’s 10ms lag in *tʰari:ga* ‘way’ for the Şa'īdī example.

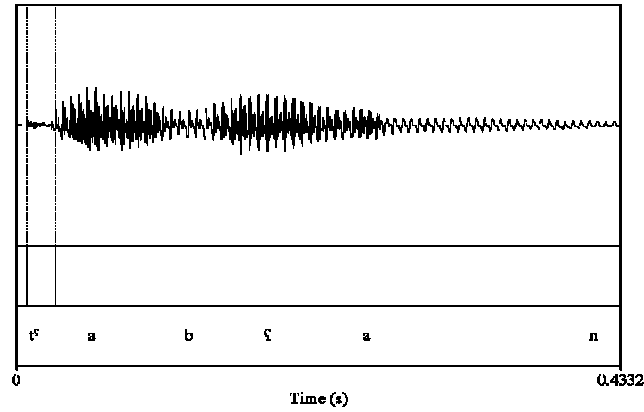


Figure 7: Waveform for Nubian [tʰ] < /tʰ/ with approximately 20ms of lag

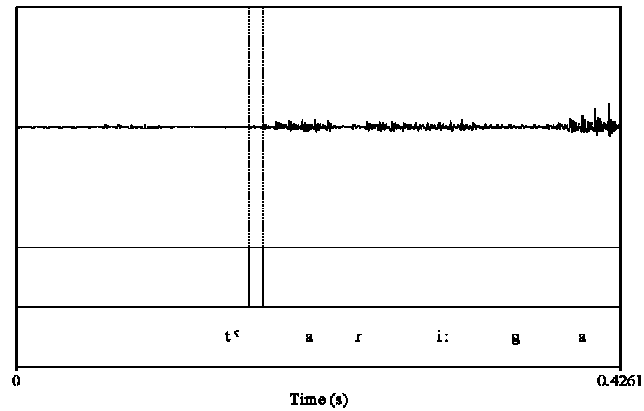


Figure 8: Waveform for Šaʿīdī [tʰ] < /tʰ/ with approximately 10ms of lag

This finding is of note because examples 1-3 indicate that the Nubians may pronounce [tʰ] < /tʰ/ in the same way as /t/. In many dialects of Arabic, [tʰ] < /tʰ/ is an unaspirated sound, while /t/ is aspirated (cf. Khattab et. al, 2006; Al-Ani, 1970:44-45; Odisho, 1973:53-54; Bukshaisha, 1985:228; Al Nuzaili, 1993:75). I selected ten tokens of /t/ in this corpus, measured, and averaged their VOT, and found that their mean is 37.13ms. It seems that /t/ is more aspirated than the [tʰ] realization of /tʰ/ in Aswan Arabic. More importantly, the Nubians' VOT lag of [tʰ] < /tʰ/ is longer and closer to the aspiration of /t/ than the Šaʿīdīs', just as hypothesized (H<sub>3</sub>). However, there is still a large difference in VOT (14ms) between the Nubians' pronunciation of [tʰ] for the phoneme /tʰ/ and the average VOT of the ten /t/ tokens.

#### 4. Discussion

This paper builds on the author's acoustic description of /tʕ/ in Aswan Arabic (Schroepfer, 2016), which described the voiced and voiceless variants [d̪] and [tʕ] < /tʕ/. The present study contributes new evidence of a voiced implosive allophone with a short VOT lead that I have transcribed as [d̪]. My previous work (2016) did not account for the effects that individual speakers and words can exert upon the VOT averages used to describe these variants; nor did it show that the [tʕ] < /tʕ/ also varies due to self-ascribed ethnic identity. Future field research is needed to study the phonetic particulars of what I have impressionistically identified as an implosive in this dialect. For example, studying larynx movement and air pressure using a mask would provide further evidence of ingressive airflow. However, it is not possible to return to Egypt to undertake any further linguistic field work at this time due to the recent political climate coupled with the fact that the Egyptian government is reluctant to grant permission to conduct such investigations.

The definition of ethnicity has differed in sociolinguistic studies throughout Arabic-speaking societies. Davies and Bentahila (2006:56) suggest a very general definition of ethnicity: “an analytical tool used to describe the bonds which lead certain people to identify themselves as this group.”<sup>11</sup> Jonathon Owens (2001:434) has also described ethnicity in Arabic-speaking societies as “any of a number of social parameters by which non-national social groupings are distinguished, including religion, shared history, skin colour, kinship, lineage, and place of origin.”

Several empirical studies on varieties of spoken Arabic have understood the relationship between ethnicity and language variation as linguistic differences between religious groups (cf. Abu Haidar, 1991, Holes 1987, Blanc 1964). Geographic origin also has represented a common way to define the variable of ethnicity (see Owens 1995, Cotter and Horesh 2015, Hachimi 2007). However, scholars also note that the construct of ethnicity can be based on self-identified narratives as well as others' perceptions of that construct (Fought, 2006:6; Smelser, 2001:3).

The Nubians and Šaʿīdīs self-identified their lineage into one of the two groups, but never both. The Nubians project an African identity in contrast to their Šaʿīdī counterparts who identify as Arab. Moreover, both groups actually perceived differences between their pronunciation in

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<sup>11</sup>See Fishman, 1977:17 for a similar description.

their respective dialects of Arabic (see examples 1-5). In other words, the self-identified ethnic ancestry as well as each group's perceptions of the other were key elements in outlining the definition of ethnicity in this study.

This paper provides empirical evidence that the above definition of ethnicity plays an important role in the multi-ethnic context of Aswan. It demonstrates that the Nubians tend to realize all productions /t<sup>h</sup>/ with significantly more VOT lag than their Ṣa'īdī counterparts. I demonstrate that the Ṣa'īdīs' production of more voiced [d̪] < /t<sup>h</sup>/ tokens than the Nubians' contributes to their lower mean VOT. Further, the third and last analysis reports that there is a significant difference in the two groups' respective productions of [t<sup>h</sup>] < /t<sup>h</sup>/. The Nubians consistently produce [t<sup>h</sup>] < /t<sup>h</sup>/ with more VOT lag than the Ṣa'īdīs do.

Language contact between Nubian and Arabic does not explain this sociolinguistic variation based on ethnic identity, especially for [t<sup>h</sup>] < /t<sup>h</sup>/, but its phonetic origins may lie therein. The two languages have been in contact for several centuries. All of the Nubian consultants in this study speak Arabic natively and with complete fluency. However, the younger generations are more likely to be shifting to Arabic and possess more limited proficiency in Nubian (Rouchdy, 1991). As mentioned above, the pharyngealized /t<sup>h</sup>/ in many dialects of Arabic is unaspirated, while the /t/ is aspirated. However, the Nubian language does not distinguish between pharyngealized and plain stops like Arabic does. It instead only contains the aspirated stop /t/ (Abdel-Hafiz, 2009).<sup>12</sup> Transferring this lack of distinction from Nubian to Arabic could have given rise to the Nubians' gravitation toward more aspirated realization of [t<sup>h</sup>] < /t<sup>h</sup>/, and the Ṣa'īdīs' respective inclination for shorter aspiration. In short, it is important to note that contact may only explain the origins of the variation, but does not account for the sociolinguistic factors described in this article.

Several similarities in the social dynamics between Bahrain and Aswan exist. Both regions have witnessed rapid urbanization since the last half of the 20<sup>th</sup> century. The minority Nubians of Aswan and Shī'a of Bahrain represent two indigenous minority ethnic groups that have experienced the in-migration of a dominant majority group. The majority Ṣa'īdīs have been living in southern Egypt since the sixth century, while the majority Sunnis who embrace the same sect of Islam as the long ruling Ḥalīfa family have been migrating to Bahrain for about the last

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<sup>12</sup>The author of the Nubian grammar clarified that the stops were aspirated via personal communication in 2012.

200 years. The ethnic groups of both areas have experienced increased contact with one another and generally exercise endogamous marriage patterns.

Despite the similarities in social dynamics, the minority Nubians appear to possess their own linguistic patterns instead of converging to the dialectal forms of the majority *Ṣaʿīdīs*. This pattern runs counter to those of their respective Bahraini counterparts. One must consider recent events that have occurred in southern Egypt when analyzing this trend for the Nubians of Aswan. The resettlement of the Nubians in the 20<sup>th</sup> century has had clear negative impacts on traditional Nubian culture and language, and has played a large role in reshaping society in southern Egypt. First, Nubians in Aswan now live in close quarters with one another and their *Ṣaʿīdī* neighbors. However, the two ethnic groups do not often exercise exogamous marriage patterns. Second, the Nubians have faced a loss of their indigenous language, culture, and way of life. Third, all official education must be in Arabic as Nubian is not recognized, further marginalizing the Nubian language. Nevertheless, Rouchdy (1991:17) notes that one of the positive results from the resettlement is “a growing sense of Nubian ethnic identity” in southern Egyptian communities with increased cultural activities and even the opening of a Nubian Museum in Aswan. With the pressure these events have exerted on the Nubian identity in Aswan, one way they can distinguish themselves from other Egyptians and in particular, the majority *Ṣaʿīdīs*, is with their own accent in Arabic.

## References

- Abd-el Jawad, H. (1981). *Lexical and Phonological Variation in Spoken Arabic in Amman*. PhD Dissertation. University of Pennsylvania, Philadelphia, PA.
- Abdel-Hafiz, A. S. (2009). *A Reference Grammar of Kunuz Nubian: A Nile Nubian Language Spoken in Egypt*. Saarbrücken, Germany: VDM Verlag Dr. Müller.
- Abu-Haidar, F. (1991). *Christian Arabic of Baghdad*. Wiesbaden: Otto Harrassowitz.
- Abu-Lughod, L. (2005). *Dramas of Nationhood: The Politics of Television in Egypt*. Chicago & London: The University of Chicago Press.
- Al-Ani, S. (1970). *Arabic phonology: An acoustical and physiological investigation*. The Hague, The Netherlands: Mouton Publishers.
- Al-Nuzaili, A. M. (1993). *Experimental study of emphasis and voicing in the plosives of Yemeni spoken Arabic*. Unpublished PhD Thesis. Leeds, England: University of Leeds.

- Al-Wer, E. (2007). The Formation of the Dialect of Amman: from Chaos to Order. In Miller, Catherine, Dominique Caubet, and Janet Watson (Eds.) *Arabic in the City: Issues in Dialect Contact and Language Variation* (pp. 55–76). New York: Routledge.
- Aswan Census. (2006). ‘Adad al-usar wa-al-sukkān bi-tawābi‘ al-qurā ṭibqan lil-natā’ij al-nihā’iyah lil-ta’dād al-‘āmm 2006/Jumhūrīyat Miṣr al-‘Arabīyah, al-Jihāz al-Markazī lil-Ta‘bi’ah al-‘Āmmah w-al-Iḥṣā’.
- Behnstedt, P. and M. Woidich. (1985a). Die Ägyptisch-Arabischen Dialekte. *Beihefte Zum Tübinger Atlas Des Vorderen Orients*. Reihe B, Geisteswissenschaften. Wiesbaden, Germany: L. Reichert. Vol. 1.
- Behnstedt, P. and M. Woidich. (1985b). Die Ägyptisch-Arabischen Dialekte. *Beihefte Zum Tübinger Atlas Des Vorderen Orients*. Reihe B, Geisteswissenschaften. Wiesbaden, Germany: L. Reichert. Vol. 2.
- Behnstedt, P. and M. Woidich. (1985c). Die Ägyptisch-Arabischen Dialekte. *Beihefte Zum Tübinger Atlas Des Vorderen Orients*. Reihe B, Geisteswissenschaften. Wiesbaden, Germany: L. Reichert. Vol. 3.
- Blanc, H. (1964). *Communal dialects of Baghdad*. Cambridge, Massachusetts: Harvard University Press.
- Bukshaisha, F. (1985). *An experimental phonetic study of some aspects of Qatari Arabic*. Unpublished PhD Thesis. Edinburgh, Scotland: University of Edinburgh.
- Chambers, J. and P. Trudgill. (1998). *Dialectology*. Cambridge, Massachusetts: Cambridge University Press.
- Cotter, W. and U. Horesh. (2015). Social integration and dialect divergence in coastal Palestine. *Journal of Sociolinguistics*, 19, 460–483.
- Davies, E. and A. Bentahila. (2006). Ethnicity and Language. In K. Versteegh, M. Eid, A. Elgibali, M. Woidich and A. Zaborski (Eds.), *Encyclopedia of Arabic Language and Linguistics*. Leiden: Brill, Vol. 2: 58–65.
- Fahim, H. (1983). *Egyptian Nubians: Resettlement and Years of Coping*. Salt Lake City, Utah: University of Utah Press.
- Fishman, J. (1977). Language and Ethnicity. In H. Giles (Ed.), *Language, Ethnicity, and Intergroup relations* (pp. 15–57). London: Academic Press.
- Fought, C. (2006). *Language and Ethnicity*. Cambridge, UK: Cambridge University Press.

- Hachimi, A. (2007). Becoming Casablancon: Fessis in Casablanca as a case study. In Catherine Miller (Ed.) *Arabic in the City: Issues in Dialect Contact and Language Variation* (pp. 166–187). London, England: Routledge Publishers.
- Hasan, Y. (1967). *The Arabs and the Sudan*. Edinburgh: E.U.P.
- Heath, J. (2002). *Jewish and Muslim Dialects of Moroccan Arabic*. London: Routledge.
- Holes, C. (1980). Phonological Variation in Bahraini Arabic: The [j] and [y] allophones of /j/. *Zeitschrift für Arabische Linguistik*, 4, 72–89.
- Holes, C. (1983). Patterns of communal language variation in Bahrain. *Language in Society*, 12, 433–457.
- Holes, C. (1987). *Language Variation and Change in a Modernising Arab State: The Case of Bahrain*. London and New York: Routledge Publishers.
- Holes, C. (1995). Community, Dialect, and Urbanization in the Arabic-Speaking Middle East. *Bulletin of the School of African and Oriental Studies*, 58 (2), 270–287.
- Hopkins, N. (2003). *Upper Egypt: Life along the Nile*. Højbjerg, Denmark: Moesgård Museum.
- Khalafallah, A. (1969). *A Descriptive Grammar of Sa'idi Egyptian Colloquial Arabic*. The Hague, The Netherlands: Mouton Publishers.
- Khattab, G, F. Al-Tamimi and B. Heselwood. (2006). Acoustic and auditory differences in the /t/–/t̤/ opposition in male and female speakers of Jordanian Arabic. In Sami Boudelaa (Ed.) *Perspectives on Arabic Linguistics XVI: Papers from the Sixteenth Annual Symposium on Arabic linguistics* (pp. 131–160). Cambridge, England: John Benjamins Publishing.
- Labov, W. (2001). *Principles of Linguistic Change, Vol. 2: Social Factors*. Malden, Massachusetts: Blackwell Publishers Inc.
- Labov, W. (1984). Field methods of the project on linguistic change and variation. In John Baugh and Joel Sherzer (Eds.) *Language in Use: Readings in Sociolinguistics* (pp. 28–53). Englewood Cliffs, New Jersey: Prentice-Hall.
- Ladefoged, P., K. Williamson, B. Elugbe, and A. Uwulaka. (1976). The stops of Owerri Igbo. *Studies in African Linguistics*, 6, 147–163.
- Lewis, P., G. Simons, and C. Fennig (Eds.). (2018). *Ethnologue: Languages of the World, Nineteenth Edition*. Dallas, Texas: SIL International. Available Online: <http://www.ethnologue.com>.

- Lisker, L. and A. Abramson. (1967). Some effects of context on voice onset time in English stops. *Language and Speech*, 10, 1–28.
- Miller, C. (2005). Between Accommodation and Resistance: Upper Egyptian migrants in Cairo. *Linguistics*, 43, 903–956.
- Miller, C. (2004). Between myth and reality: the construction of a Sa'idi identity in Cairo. In Hopkins, Nicholas and Reem Saad (Eds.) *Upper Egypt: Identity and Change* (pp. 25–54). Cairo, Egypt: American University in Cairo Press.
- Miller, C. (1998). Pour une étude du contact dialectal en zone urbaine : Le Caire. *Proceedings of the 16th International Congress of Linguists*. Oxford, England: Pergamon. Paper 0106.
- Nishio, T. (1994). The Arabic dialect of Qift (Upper Egypt): Grammar and classified vocabulary. *Asian and African Lexicon* 27. Tokyo, Japan: Institute for the Study of Languages and Cultures of Asia and Africa.
- Odisho, E. (1973). *The role of the rear section of the vocal tract in Baghdadi Arabic*. Unpublished M.A. Thesis. University of Leeds, Leeds, England.
- Owens, J. (2001). Arabic Sociolinguistics. *Arabica*, 48, 419–469.
- Owens, J. (1995). Minority Languages and Urban Norms: a Case Study. *Linguistics*, 33, 305–358.
- Owens, J. (1993). *A Reference Grammar of Nigerian Arabic*. Wiesbaden, Germany: Harrassowitz.
- Pratt, N. (2007). Aswan. In Dumper, Michael and Bruce Stanley (Eds.) *Cities of the Middle East and North Africa: A Historical Encyclopedia* (pp. 49–52). Santa Barbara, California: ABC-CLIO.
- Rouchdy, A. (1991). *Nubians and the Nubian Language in Contemporary Egypt: A Case of Cultural and Linguistic Contact*. Leiden: Brill.
- Schroepfer, J. (2016). Ethnic Variation of \*/tʃ/ in Aswan Arabic. *University of Pennsylvania Working Papers in Linguistics*, 22 (2). Philadelphia: University of Pennsylvania Press
- Sibawayhi. (1898). *Al-Kitāb*. 'Abu Bashār 'Amr ibn 'Uṭhman (Ed.). Cairo: Bulaq.
- Smelser, N. (2001). Wilson, William and Faith Mitchell (Eds.) *America Becoming: Racial Trends and Their Consequences*. vol. 1. Washington, DC: National Academy Press.
- Trudgill, P. (1986). *Dialects in Contact*. Oxford: Basil Blackwell.
- Winkler, A. (1936). *Ägyptische Volkskunde*. Stuttgart, Germany: W. Kohlhammer.