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The Interchange between the Arabic Voiced Pharyngeal Fricative [ʕ] and the Voiced Glottal Stop Consonant [ʔ] in Hamadia

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Abstract:
The sound system of Arabic boasts some unique consonantal sounds, such as the voiced pharyngeal fricative "ayn [ʕ]". A lot of modern dialects in the Arab World, including Algeria, interchange this sound with the voiced glottal stop "hamza [ʔ]". In this respect, the present study investigates sound substitution in the dialect spoken in Hamadia, Tiaret, Algeria. It focuses on replacing [ʕ] with [ʔ] and vice versa. Data was collected through audio recordings of spontaneous conversations as a primary tool of research in addition to a stratified survey conducted with 90 participants. The findings indicate that indigenous residents consistently preserve both [ʕ] and [ʔ]; whereas, migrants from Medea and Djelfa frequently replace [ʕ] with [ʔ]. By contrast, old less educated migrants from Ayn Defla, Chlef, and Tissemsilt show the reverse trend. The study shows how sound patterns are shaped by social and geographic factors.
Keywords: *Arabic; consonantal sounds; dialects; sound substitution; voiced glottal stop; voiced pharyngeal fricative*

1. Introduction

The phonological system of Arabic includes a range of consonantal sounds that are central to its structure and identity. Among these, the voiced pharyngeal fricative "ayn [ʕ]" and the voiced glottal stop "hamza [ʔ]" stand out due to their distinct articulation in Classical Arabic. However, in many modern dialects, including some varieties spoken in Algeria, these two sounds are not always maintained as distinct. In Hamadia, a city located in the west of Algeria, speakers have been observed interchanging [ʕ] and [ʔ] in everyday speech.

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Hamadia provides a rich linguistic context for studying variation. The city has experienced waves of migration from neighbouring regions, such as Djelfa and Tissemsilt. This has led to a blending of dialects in the area. In this regard, our paper seeks to investigate the alternation of [ʕ] and [ʔ] in Hamadia, thereby clarifying linguistic variation within a single city and whether or not this has an impact on the inhabitants' use of Classical Arabic and Modern Standard Arabic. The aim of this research is to answer the following questions:

1. How does the alternation between [ʕ] and [ʔ] correlate with speaker demographics?

2. What historical or geographic influences may have contributed to this variation in pronunciation?

Here are several possible hypotheses that align with our study's focus:

1. Speakers with higher education are more consistent in using the standard pronunciations of [ʕ] and [ʔ], especially in reading tasks or formal settings.

2. Increased mobility, media exposure, and schooling have led younger generations to reduce dialectal differences in pronunciation.

3. The observed variation in [ʕ] and [ʔ] is a result of historical migration and regional dialectal contact.

The main motive for studying this phenomenon is the need to record and understand how dialectal Arabic changes as a result of social influences. Further, this study responds to the broader call in sociolinguistics to give voice to under-documented speech communities and dialect zones.

Many sociolinguistic and phonological studies have been done in Algeria to show how social factors affect the use of language and the differences between regional dialects.

An interesting study is Phonological Processes in Algerian Arabic as Spoken in Mostaganem: An Optimality Perspective by Benyoucef and Mahadin. This study analyses phonological processes in the Mostaganem dialect, such as epenthesis, syncope and assimilation. Another important addition is Zahida Chebchoub, who conducted a sociolinguistic study of how Arabic and French are used in Algiers. The focus of this study was bilingualism, language choice and code-switching in the capital city.

In fact, understanding this phonological interchange contributes to several areas of linguistic research. Firstly, it shows how fine-grained sound variation reflects social meaning. It also captures an ongoing shift in real-time across generations. Besides, it reveals how speakers negotiate their place in society through language.

In the case of Hamadia, studying this variation uncovers how social identities are indexed through subtle sound choices and how broader patterns of mobility and education shape the future of Arabic in this region. This investigation does not only describe what is happening linguistically; it explains why it matters.

2. Linguistic Variation

Language variation denotes the coexistence and development of several language varieties inside societies. According to Richards and Schmidt, "Language variation refers to differences in pronunciation, grammar, or word choice within a language" (2010). Variations in a single language or across several languages can result from distinct social and environmental factors; hence, language variation becomes a major emphasis in sociolinguistics.

It is important to note that language change is spurred on by language variation since specific phonological variants may become more common over time, and cause

changes to the usual pronunciation of a language. Different languages are thought to be a result of changes in society within groups. As changes happen in the socioeconomic, they show what life is really like for people. This idea is closely related to speech communities, which plot the different dialects that exist in a country on a map so that researchers can study how languages behave. These communities' relationships have had a big impact on how people from different social classes deal with one another. Differences in language allow researchers to see how society changes through the visuals of language.

Language variation also shows how people act in various social situations, which is also mirrored in the way a person talks. It means that language changes not only based on where it is spoken and the people who speak it, but also based on the conversation. Variation in language is also closely related to dialectology because it enables to figure out where someone is from or what their social class is just by their way of speaking.

Every living language needs to change in order to stay alive. Depending on the setting, people who speak the same language may adapt their dialect to fit the conversation. The choice of language is often based on the social status of the people involved, which sets the tone of speech. In this respect, the degree of formality, the speakers' socioeconomic background, and the situation are all taken into account.

There is also dialectal variation, which refers to the differences in grammar, sound, and vocabulary among different dialects of the same language. Divergence between dialects is seen as a continuum, since different varieties may have different traits that set them apart from the standard language and the other varieties. Hinskens et al state that "Dialect change can have several different manifestations. Among these, dialect convergence (dc) and dialect divergence (dd) noticeably affect the relationships between related dialects. Dc and dd have probably been present for as long as dialects have existed" (2005).

Sociolinguistic variables are very important to variationist sociolinguistics. They affect the choices that a person makes when they speak. On top of that, there are age, gender, educational level and social context. One way to see this is to compare the speech of teens and older people. Teenagers have their own slang, and even within the same dialects, the sounds that older people use are different. In addition, people with a high level of education are less likely to make grammar mistakes when they talk. According to Millward and Hayes, "Regional variation is only one of many possible types of differences among speakers of the same language. For example, there are occupational dialects.... educational dialects... dialects of age... and dialects of social context" (2012, p. 5).

3. Dialect Chains

A dialect chain is a sequence of dialects in which the speakers of neighbouring dialects may understand one another, but this understanding diminishes as the distance between places grows. According to Crystal (2006), "A dialect continuum or dialect chain is a series of language varieties spoken across some geographical area such that neighbouring varieties are mutually intelligible, but the differences accumulate over distance so that widely separated varieties may not be" (p. 144). Chambers and Trudgill (1998) state that a dialect continuum or chain exists when speakers of one dialect comprehend speakers of a neighbouring dialect, but not those farther away in the chain.

Dialect chains illustrate the fluid and interconnected nature of language variation, shedding light on how language variations exist in a continuum. They represent a series of dialects spoken across different regions where neighbouring dialects are mutually intelligible; however, as one moves further along the chain, the dialects become increasingly distinct. According to Chambers and Trudgill (2004),

> As one moves from village to village in a specific direction, they will observe linguistic differences distinguishing each village from the next. The farther one travels from the starting point, the more pronounced these differences become. Although there is never a point where neighbouring dialects become completely unintelligible, the cumulative linguistic differences result in increased comprehension challenges as the geographical distance grows. This phenomenon is referred to as a geographical dialect continuum (p. 5).

This gradual change means that speakers from distant parts of the chain may find each other's dialects incomprehensible. As individuals from neighbouring regions interact, they share linguistic characteristics, resulting in commonalities in their language.

As a matter of fact, dialect chains can be observed in diverse places across the globe, since language varieties undergo gradual changes throughout the course of time. Therefore, dialectology seeks to understand linguistic variations not just in terms of geographical areas, but also across distinct temporal epochs.

To study dialect chains, researchers typically conduct field surveys, and perform statistical analysis on acquired linguistic data. This empirical methodology helps to discover the patterns of language variation, and thus prevent linguistic prejudices.

4. Sound Substitution

Sound substitution denotes the act of replacing one sound by another within a given language. It is a result of the interaction among speakers of various language varieties. For instance, speakers of minority languages may absorb phonetic components from a dominant language. In a broader sense, speakers often substitute some sounds so as to link phonological differences among several languages or dialects.

In English, it is referred to as phonemic substitution which means replacing one phoneme by another to form a new word which is different in meaning. According to Adams, "Phoneme substitution involves replacing one phoneme in a word with another and observing the resulting change in meaning. It reflects a speaker's awareness of the internal structure of words" (1990). Nonetheless, in Arabic, sound substitution does not necessarily require a change in meaning. As far as our paper is concerned, certain speakers replace the pharyngeal fricative [ʕ] with the glottal stop [ʔ]. For example, they pronounce the term "يعرف" which means "to know" as /jæʔræf / instead of /jæʕræf/.

Sound substitution is stimulated by language contact. A common outcome of linguistic interaction is transferring phonetic features from a language into another. This is particularly common in settings of colonisation or migration where several language groups interact extensively. This diversity usually leads to the slow adoption of new phonemes among different groups inside a culture, which finally culminates in linguistic development.

Moreover, bilingual societies show the influence of a second language, which leads to creating new sounds to either mark social identity or promote mutual intelligibility.

Speakers could purposefully choose distinct sounds to identify with a particular social group or set apart from others. This phenomenon usually arises in metropolitan settings where several social groups. In this regard, younger speakers may alter sounds to fit urban speaking patterns, therefore expressing modernism or group identification; whereas, elder speakers might keep traditional sounds to support cultural identity.

5. Data Collection Methods and Procedures

This sociolinguistic study explores and interchange between the Arabic voiced pharyngeal fricative [ʕ] and the glottal stop [ʔ] in the dialect of Hamadia, Algeria. To understand how and why this interchange occurs, we adopted a mixed-method approach; a combination of qualitative and quantitative tools was used for data collection.

5.1. Recordings

As a primary tool of research, we relied on audio recordings that were conducted in both formal and informal settings to elicit natural speech. The audio recordings were transcribed according to the International Phonetic Alphabet (IPA). Then, they were analysed to check whether the phonemic realisation of these sounds is consistent or variable. To monitor the patterns of stability or change, pronunciations were contrasted among ethnic groups.

5.2. Questionnaire

To complement the recorded data and ensure statistical relevance, a questionnaire was administered to a sample of 90 residents of Hamadia. The participants were classified based on four main variables:

Gender: male and female
Age: under 20 / between 20 and 50 / over 50
Education level: ranging from no formal schooling to university degree
Ethnic origin: indigenous residents of Hamadia / migrants from Ayn Defla, Chlef, and Tissemsilt/ migrants from Medea and Djelfa

This stratification ensures that the data captures the full range of linguistic variation that may exist across different social backgrounds. The questionnaire is divided into three main sections: The first section gathers basic demographic details. Participants are asked to indicate their gender, age group, ethnic background, and level of education. These factors will help researchers correlate pronunciation habits with social and regional variables.

The second section focuses on actual pronunciation patterns. Respondents report how they pronounce [ʕ] and [ʔ] in casual speech. The questions also explore whether these pronunciations shift when reading religious texts.

The third section examines linguistic attitudes. Participants contemplate the significance of accurate pronunciation and whether they have ever received corrections. If so, they are requested to identify the individuals who typically provide them with advice, whether it be family, acquaintances, or teachers.

The final section investigates pronunciation in a variety of contexts. It enquires whether the participants find it easy to conventionally pronounce [ʕ] and [ʔ]. It also investigates contexts in which the participants modify their speech.

A pilot group of ten people from Hamadia filled out the questionnaire first to make sure it was accurate. The test results were used to improve the wording and format of the questions.

6. Results

6.1. Recordings

The findings indicate that targeted sounds are conventionally pronounced by all the indigenous inhabitants of Hamadia, regardless of their social background. Additionally, there is no indication of an impact on CA and MSA due to its identical pronunciation among this group.

Table.1. Pronunciation patterns among the indigenous people of Hamadia

			Pronunciation			
Variable			ADA		CA & MSA	
Gender	Age	Education Level	Ayn [ʕ]	Hamza [ʔ]	Ayn [ʕ]	Hamza [ʔ]
Male and female	Younger than 20	No formal schooling	[ʕ]	[ʔ]	[ʕ]	[ʔ]
		Primary school	[ʕ]	[ʔ]	[ʕ]	[ʔ]
		Secondary school	[ʕ]	[ʔ]	[ʕ]	[ʔ]
		University	[ʕ]	[ʔ]	[ʕ]	[ʔ]
	20-50 years	No formal schooling	[ʕ]	[ʔ]	[ʕ]	[ʔ]
		Primary school	[ʕ]	[ʔ]	[ʕ]	[ʔ]
		Secondary school	[ʕ]	[ʔ]	[ʕ]	[ʔ]
		University	[ʕ]	[ʔ]	[ʕ]	[ʔ]
	Older than 50	No formal schooling	[ʕ]	[ʔ]	[ʕ]	[ʔ]
		Primary school	[ʕ]	[ʔ]	[ʕ]	[ʔ]
		Secondary school	[ʕ]	[ʔ]	[ʕ]	[ʔ]
		University	[ʕ]	[ʔ]	[ʕ]	[ʔ]

The uniformity of pronunciation among all groups suggests that the indigenous inhabitants of Hamadia have maintained a strong connection to the standard language patterns. The retention of these words in their natural form demonstrates a resistance to outside language influences and a preservation of linguistic heritage.

Concerning the migrants from Ayn Defla, Chlef and Tissemsilt, the results show that younger age cohorts (under 50 years) conventionally use these sounds. However, there is a significant trend among individuals over the age of 50, particularly those who have not received formal education or have only attended primary school, in which some individuals substitute [ʔ] with [ʕ]. For example, they pronounce the terms ألف، قرآن respectively as /qʊrʔaːn/ and /ʔælf/.

Table.2. Pronunciation patterns among the migrants from Ayn Defla, Chlef and Tissemsilt

Variable			Pronunciation			
			ADA		CA & MSA	
Gender	**Age**	**Education Level**	**Ayn [ʕ]**	**Hamza [ʔ]**	**Ayn [ʕ]**	**Hamza [ʔ]**
Male and female	Younger than 20	No formal schooling	**[ʕ]**	**[ʔ]**	**[ʕ]**	**[ʔ]**
		Primary school	**[ʕ]**	**[ʔ]**	**[ʕ]**	**[ʔ]**
		Secondary school	**[ʕ]**	**[ʔ]**	**[ʕ]**	**[ʔ]**
		University	**[ʕ]**	**[ʔ]**	**[ʕ]**	**[ʔ]**
	20-50 years	No formal schooling	**[ʕ]**	**[ʔ]**	**[ʕ]**	**[ʔ]**
		Primary school	**[ʕ]**	**[ʔ]**	**[ʕ]**	**[ʔ]**
		Secondary school	**[ʕ]**	**[ʔ]**	**[ʕ]**	**[ʔ]**
		University	**[ʕ]**	**[ʔ]**	**[ʕ]**	**[ʔ]**
	Older than 50	No formal schooling	**[ʕ]**	**[ʕ]**	**[ʕ]**	**[ʕ]**
		Primary school	**[ʕ]**	**[ʕ]**	**[ʕ]**	**[ʕ]**
		Secondary school	**[ʕ]**	**[ʔ]**	**[ʕ]**	**[ʔ]**
		University	**[ʕ]**	**[ʔ]**	**[ʕ]**	**[ʔ]**

N.B. The red colour in the table is used to refer to the unconventional pronunciation

The tendency of these elder migrants to replace [ʔ] with [ʕ] suggests that their speech is influenced by a regional or dialectal factor that is not present in the speech of younger demographics or those with high educational attainment. Furthermore, the differences in pronunciation among the senior population (older than 50) point to age, and maybe the effect of regional dialects spoken in Ayn Defla, Chlef and Tissemsilt.

Among the migrants from Media and Djelfa, mostly the ones older than 50, there is a clear tendency of substituting [ʕ] with [ʔ], for instance, they pronounce "عباية" meaning "a dress" as /ʔbæjæ/ instead of /ʕbæjæ/. Particularly among those without formal education and those who had elementary education, the demographic over 50 replace [ʕ] with [ʔ] even on the level of CA and MSA, suggesting that these alterations are ingrained and may influence Quranic recitation.

Table.3. Pronunciation patterns among the migrants from Media and Djelfa

Variable			Pronunciation			
			ADA		CA & MSA	
Gender	**Age**	**Education Level**	**Ayn [ʕ]**	**Hamza [ʔ]**	**Ayn [ʕ]**	**Hamza [ʔ]**

Male and female	Younger than 20	No formal schooling	[ʔ]	[ʔ]	[ʕ]	[ʔ]
		Primary school	[ʔ]	[ʔ]	[ʕ]	[ʔ]
		Secondary school	[ʔ]	[ʔ]	[ʕ]	[ʔ]
		University	[ʔ]	[ʔ]	[ʕ]	[ʔ]
	20-50 years	No formal schooling	[ʔ]	[ʔ]	[ʕ]	[ʔ]
		Primary school	[ʔ]	[ʔ]	[ʕ]	[ʔ]
		Secondary school	[ʔ]	[ʔ]	[ʕ]	[ʔ]
		University	[ʔ]	[ʔ]	[ʕ]	[ʔ]
	Older than 50	No formal schooling	[ʔ]	[ʔ]	[ʔ]	[ʔ]
		Primary school	[ʔ]	[ʔ]	[ʔ]	[ʔ]
		Secondary school	[ʔ]	[ʔ]	[ʕ]	[ʔ]
		University	[ʔ]	[ʔ]	[ʕ]	[ʔ]

N.B. The red colour in the table is used to refer to the unconventional pronunciation

Interestingly, the findings indicate that gender does not appear to influence the pronunciation of [ʕ] and [ʔ] among the three ethnic groups. Regardless of their age or level of education, male and female speakers within each ethnic group exhibit the same pronunciation patterns. Whether articulating the given sounds conventionally or substituting one for the other, the pronunciation patterns remain consistent across both males and females.

In formal settings, individuals aged 50 and above are likely to retain to the patterns of their dialectal Arabic. In contrast, younger age groups (under 50 years) display no variation in the pronunciation of these sounds, indicating that they conform to traditional pronunciation norms.

6.2. Questionnaire

The results of the questionnaire are divided into four sections. Each section focuses on a specific aspect of the study.

Section One: Demographic Information

Table.4. Demographic information of the participants

Ethnic Origin			Total
32 indigenous residents of Hamadia	**30 migrants from Ayn Defla, Chlef, and Tissemsilt**	**28 migrants from Medea and Djelfa**	**90 Inhabitants**

Age	**under 20**	**11**	**13**	**10**	**34**
	20 - 50	**13**	**8**	**10**	**31**
	over 50	**8**	**10**	**7**	**25**
Gender	**Male**	**18**	**15**	**16**	**47**
	Female	**12**	**15**	**14**	**43**
Academic attainment	**No formal education**	**3**	**4**	**2**	**9**
	Primary education	**5**	**3**	**7**	**15**
	Secondary education	**9**	**12**	**7**	**28**
	University degree	**15**	**11**	**12**	**38**

1. The table reveals that gender distribution among the 90 participants is balanced, with 47 males and 43 females. This balance ensures that any observed pronunciation patterns are not skewed by gender, allowing for a more neutral interpretation of the influence of other sociolinguistic factors.

2. Most participants fall within the 20 to 50 age range, making up the majority of the sample. This suggests that the data reflects the speech patterns of active, socially engaged adults who are likely influenced by both older, traditional pronunciations and newer trends. The younger group under 20 and the older group above 50 provide useful contrast to track generational differences.

3. The ethnic background of participants is fairly evenly divided, with 32 indigenous residents of Hamadia; 30 migrants from Tissemsilt, Chlef, Ayn Defla; and 28 from Medea and Djelfa. This spread allows for meaningful comparisons between local and migrant pronunciation behaviours and how regional identity affects phoneme realisation.

4. In terms of education, most participants (38) hold a university degree, and a significant number (28) who reached secondary education. This indicates that a large portion of the sample has been exposed to Modern Standard Arabic in formal settings, which could influence their pronunciation in formal or religious contexts compared to informal, everyday speech. 15 participants dropped out after primary school, wile 9 have not joined school at all.

Section Two: Pronunciation Patterns

1. The majority of participants (62) state that they always pronounce ayn [ʕ] correctly in everyday speech, particularly the indigenous inhabitant of Hamadia and those from Tissemsilt, Chlef, or Ayn Defla. However, 28 participants, originating from Djelfa and Medea, report that they replace it with a glottal stop [ʔ]. This variation suggests the influence from the other dialects reflecting ongoing dialect contact and levelling.

1. The sound [ʔ] appears to be more stable across all groups, with most participants (85) stating that they pronounce it consistently. A small group (5 participants) claim to

always pronounce [ʔ] as [ʕ] which could be due to confusion in rapid or casual speech, or dialectal influence.

2. When reading books or reciting Quran, the majority (80 participants) adhere to the standard pronunciation of [ʕ] and [ʔ] showing a clear distinction between casual and formal registers. This reflects a strong awareness of linguistic norms in religious contexts. A small number of participants (20) reverse the sounds, possibly due to weak formal education or dialect interference, but these are minority cases.

Section Three: Linguistic Attitudes

1. Most participants (73) consider it very important to pronounce [ʕ] and [ʔ] correctly. This reflects cultural and religious values tied to speech, especially because these sounds are central to Arabic phonology and to correct recitation in Islamic contexts. Only a small number (17 participants) find it unimportant, suggesting that the most important thing is mutual intelligibility.

2. Correction of pronunciation appears to be common, with 35 participants reporting being corrected either frequently or occasionally. This indicates that pronunciation of [ʕ] and [ʔ] is a noticeable and socially monitored feature of speech in Hamadia. The existence of correction also suggests an awareness of linguistic norms and an ongoing negotiation between dialectal variation and perceived correctness.

3. Corrections typically come from close circles mostly family members, followed by friends and teachers. 23 participants state that the usually get corrected by their teachers; while 7 of them claim that they are usually corrected by their friends. Only 5 informants report that their family members correct them. This shows that teachers play a big part to reinforce standard usage in official settings.

Section Four: Contextual Use

1. Most participants (75) say they find it easy to pronounce [ʕ] and [ʔ] correctly. This suggests that the issue is not linked to physical articulation, but to social and regional influence. Only 15 informants report a difficulty to pronounce ayn [ʕ].

2. Among the participants who interchange [ʕ] and [ʔ], 17 individuals most commonly adjust their pronunciation in in formal and religious settings. This shows clear awareness of the need for accurate articulation in sacred contexts. 4 participants do so in informal settings, when they move to different region and meet people who pronounce ayn [ʕ] conventionally.

These findings illustrate how pronunciation of [ʕ] and [ʔ] in Hamadia is shaped by a mix of regional dialect contact, education, context of use, and social attitudes. While standard forms are upheld in religious and formal contexts, everyday speech reflects a more fluid, negotiated set of patterns influenced by migration and social identity.

7. Discussion

While Hamadia may not occupy the same level of prominence as Tiaret city, it is an integral component of the cultural and historical legacy of the region. In Hamadia, the predominant languages spoken are Algerian Arabic and Berber in addition to French, which is widely used in the domains of education and administration, and is associated with high social status. On the contrary, Berber is mostly employed in private and family contexts so as to maintain traditional norms. The simultaneous presence of several languages in Hamadia reflects the wider national story of Algeria.

The results corroborate that phonological variation in Hamadia is highly structured along the lines of age, origin, and education, while gender does not play a determining role. The traditional pronunciations of [ʕ] and [ʔ] are maintained by the indigenous population. This is an indicative of their linguistic resilience and the limited influence of external factors. Nevertheless, age and regional origin are the primary determinants of sound substitution in migrant populations.

Variation is evident in the dialects of older migrants from Ayn Defla, Chlef, and Tissemsilt, which is likely the result of their prior exposure to rural or less formal dialects. Speakers from Medea and Djelfa exhibit a consistent substitution of [ʕ] with [ʔ], particularly in Arabic Dialectal Arabic (ADA), which may suggest the influence of their native dialects. This is particularly noteworthy.

In CA and MSA, the phonemes [ʕ] and [ʔ] are distinct; however, their interchangeability has been historically noted particularly in dialectal Arabic. The sound [ʕ] might be difficult for some people to pronounce, thus they replace it with [ʔ] as a way of simplification. One possible explanation for the simplification is the French influence.

Even while using MSA and CA, some speakers may unconsciously apply dialectal pronunciation patterns. For example, the verse "صراط الذين أنعمت عليهم" which means "The path of those whom You have blessed" is pronounced as:

/sˤɪrˤɑːtˤællæðiːnæ ʔænʔæmtæ ʔæleihɪm/
instead of
/sˤɪrˤɑːtˤællæðiːnæ ʔænʕæmtæ ʕæleihɪm/

Another example is the expression "العلم نور" which means "knowledge is light". This expression is pronounced as:

/ælʔɪlmʊ nuːr/ instead of /ælʕɪlmʊ nuːr/

The data indicate that education serves as a safeguard against sound substitution. In both informal and formal contexts, younger speakers and those with university-level education exhibit convergence with local norms and consistently distinguish between [ʕ] and [ʔ].

Age is equally important. Regardless of their background, younger speakers maintain the expected distinction between [ʕ] and [ʔ] in formal settings. This reflects a broader societal integration and the unifying effect of schooling and media. It may also signal a gradual levelling of regional dialectal differences in the urbanising context of Hamadia.

This research emphasises the potential for mobility and education to either preserve or degrade linguistic characteristics, as well as the manner in which communities mediate their identity through subtle changes in pronunciation.

Conclusion

This study has explored the alternation of the Arabic voiced pharyngeal fricative [ʕ] and the voiced glottal stop [ʔ] among the inhabitants of Hamadia. The findings reveal that language use in Hamadia is not homogeneous; rather, it reflects clear social patterns.

The indigenous speakers consistently preserve the phonemic distinction between [ʕ] and [ʔ], showing strong linguistic stability and resistance to external influences. The migrants, particularly those from Medea and Djelfa, exhibit more variation, especially

among older and less educated individuals who tend to merge or substitute these sounds, even in formal contexts, such as Quranic recitation. This suggests that regional dialects continue to influence speech patterns, even after migration.

Moreover, younger generations across all ethnic groups show uniformity in their pronunciation in formal settings, indicating a shift toward standardisation. Education emerges as a key factor in maintaining linguistic norms, promoting awareness of the phonemic differences and encouraging adherence to classical Arabic forms.

The overall picture shows a community in linguistic transitions. While older speakers reflect dialectal diversity and historical migration patterns, younger speakers are aligning more closely with standardised usage. This balance between tradition and change illustrates how language evolves within social and geographic contexts, influenced by factors such as schooling and generational continuity.

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APPENDICES

Appendix 1: List of Abbreviations

CA: Classical Arabic
MSA: Modern Standard Arabic
ADA: Algerian Dialectal Arabic
IPA: International Phonetic Alphabet
[ʕ]: the voiced pharyngeal fricative "ayn"
[ʔ]: the voiced glottal stop "hamza"

Appendix 2: List of Symbols

Arabic Script	IPA Symbol	Arabic Script	IPA Symbol
الهمزة (ء)	/ʔ/	ع	/ʕ/
ب	/b/	غ	/ɣ/
ت	/t/	ف	/f/
ث	/θ/	ق	/q/
ج	/dʒ/	ك	/k/
ح	/ħ/	ل	/l/
خ	/χ/	م	/m/
د	/d/	ن	/n/
ذ	/ð/	ه	/h/
ر	/r/	و	/w/
ز	/z/	ي	/j/
س	/s/	الفتحة (َ)	/a/ , /æ/
ش	/ʃ/	آ	/ɑ:/
ص	/ʂ/	الضَّمَّة (ُ)	/ʊ/
ض	/dˤ/	أُو	/u:/
ط	/tˤ/	الكسرة (ِ)	/i/
ظ	/ðˤ/	اِي	/i:/

Appendix 3: List of Tables

Appendix 4: Questionnaire

This questionnaire is intended to investigate pronunciation of the Arabic sounds "ayn [ʕ]" and "hamza [ʔ]" in Hamadia. Your participation is invaluable in helping us gain a deeper understanding of language variation within this region.

<u>Section One:</u> Demographic Information

1. Gender:

Male	Female

2. Age:

Less than 20 years	20-50 years	Over 50 years

3. Ethnic Background:

Hamadia	Tissemsilt	Chlef	Ayn Defla	Djelfa	Medea

4. Level of Education:

No formal education	Primary education	Secondary education	University degree

<u>Section Two:</u> Pronunciation Patterns

1.How do you usually pronounce "ayn [ʕ]" in everyday speech?

Always as [ʕ]	Sometimes as [ʕ] and other times as [ʔ]	Always as [ʔ]

2. How do you usually pronounce "hamza [ʔ]" in everyday speech?

Always as [ʔ]	Sometimes as [ʔ] and other times as [ʕ]	Always as [ʕ]

3. How do you pronounce [ʕ] and [ʔ] when reading books or reciting Quran?

As [ʕ] and [ʔ] respectively	As [ʔ] and [ʕ] respectively	Both sounds as [ʕ]	Both sounds as [ʔ]

<u>Section Three:</u> Linguistic Attitudes

1. In your opinion, how important is it to maintain right pronunciation in your speech?

Very important	Rather important	Unimportant

2. Have you ever been corrected or advised to pronounce [ʕ] and [ʔ] in a certain way?

Yes, frequently	Yes, occasionally	No, never

3. If yes, who usually advises or corrects your pronunciation?

Family members	Friends	Teachers

<u>Section Four:</u> Contextual Use

1. Is it easy for you to pronounce [ʕ] and [ʔ] in their traditional (normal) pronunciation?

Yes	No

2. If yes, in which contexts are you more likely to adjust your pronunciation of [ʕ] and [ʔ]?

Religious settings	Formal settings	Informal settings

<u>Thank you for your collaboration</u>