

# Variations of the Sound /t/ Regarding Students of Al-Maarif University College

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## Abstract

The current study aims to analyze the allophones of /t/ sound in different contexts among students of Al-Maarif University College to provide a reference for English foreign language learners on realization these allophones. By conducting this research, it reveals the impact of sociolinguistic factors and gender on these allophones. The data are collected from fourth stage students at English department and analyzed based on the theory proposed by Yule 2010. The participants are twenty students in which a quantitative analysis is adopted when counting the number of accurate pronunciations done by either gender. Major findings reveal that females use flaps more than males to show they are educated while males use glottals more accurately. The flapped version affects the clarity of words more than unflapped terms. Regarding the aspiration, both genders accurately pronounce aspirated sounds as rules are explicit. Based on those findings, the researcher concludes that flapping process reflects social status. The logical analysis identified that males widely used glottal stops because it is associated with British accent which is the dominant accent in Iraq.

**Keywords:** Flapping, Glottalization, Aspiration, Phonetic environment, Sociolinguistic factors

## 1. Introduction

Realizing the accurate type of /t/ sound is essential in communication to decrease misunderstanding and enable non-native speakers to understand native speakers. Native speakers use the allophone /t/ depending on intuition, so they do not face difficulty in communication. On the other hand, foreign speakers face miscommunication as they should rely on context, phonological and morphological conditions, and previous knowledge of utterances to make an analogy between a given word and a stored word in the memory.

Furthermore, the flapping process is highly associated with the high class rather than the working class, so they face difficulty interacting together. For that reason, Yule (2010) is the adopted model used to provide non- native speakers with rules that restrict the accurate usage of these allophones to solve the problem of the current study.

The Allophones of /t/ are aspirated [t<sup>h</sup>], flapped [ɾ] and glottal [ʔ] that are affected by the context in which they occur. According to Yule (2017), [t<sup>h</sup>] is aspirated when it appears at the beginning of the word. Moreover, it is articulated with a puff of air as in the word *tree* to be [t<sup>h</sup>ri:]. Concerning flapping, when /t/ occurs in intervocalic position, it is pronounced as /d/ as in the word *water* to be [ 'wo: rə]so the tongue's tip touches lightly the alveolar ridge forming a flapped sound. Generally speaking, glottal [ʔ] is articulated by the complete closure and release of the vocal folds, so the /t/ is omitted as in the word *bottle* to be [ 'boʔl].

This study focuses on flapping phenomenon which is a complicated one that is used in American English in which the Sound/t/ is turned to be a voiced alveolar sound in the flapping process. Hannisdal et al. (2020) states that flapping is affected by three factors: phonological, morphological, and sociolinguistic one. Particularly, phonological conditions encompasses syllabification, phonetic surroundings, and stress. Regarding morphological conditions, lexical frequency also has impact on flapping. In addition, sociolinguistic factors such as social status and prestige have a role in determining the accurate type of allophones.

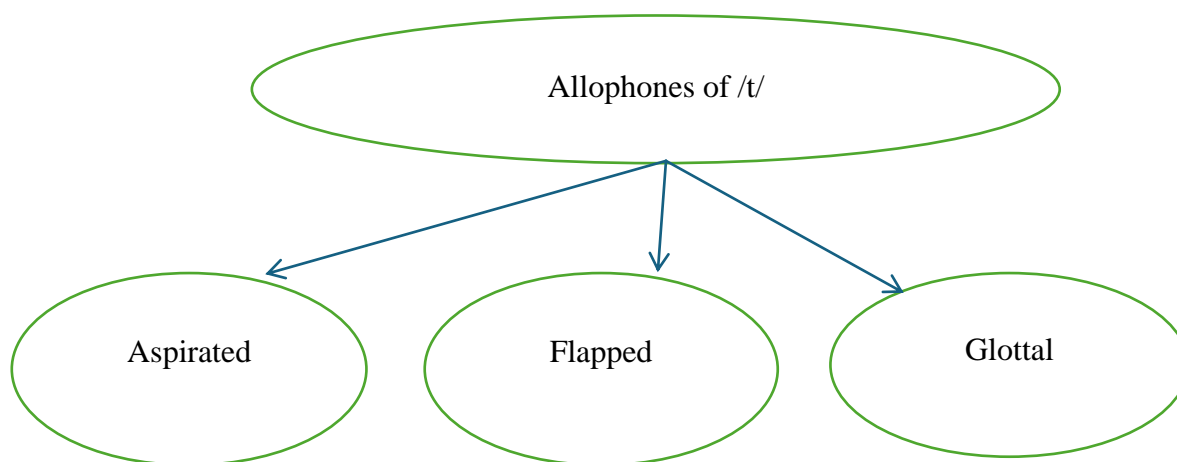


Figure 1. Sound /t/ pronunciations

### 1.1 Literature Review

A perceptual and acoustic analysis of flaps in American English is adopted by Herd et al., (2010). Herd presents a perceptual study of four natural word pairings (/t/ or /d/), which are used to change representation, word frequency, and vowel duration preceding the flap. Compared to terms with low frequency, words with high frequency are more accurately set. In addition, vowel duration is different in disyllabic tokens in which vowels that precede /d/ are longer than those precede/t/. Deciding flapped stops is based on a speaker-by-speaker basis so that women flap more than men. Furthermore, people flap when unaware of the

differences between /d/ and /t/. In addition, /d/ flaps are set accurately more than /t/ flaps. In sum, it is possible to set nonarbitrary values for flapped along with unflapped items and to draw relationships between the auditory and perceptual outcomes.

Barrera-Pardo (2022) as a model who circulates the Lingua Franca Core, a set of guidelines for international comprehensible pronunciation of English by foreign users of English. Barrera finds that Lingua Franca Core is mainly concerned with using British-based /t/ instead of American flap [ɾ]. He tests four types of flaps in American accents at intermediate-level learners with four European languages. The words presented are of four types. In addition, two experiments are adopted with a matched-guise technique by which the participants are tested using the flapped and non-flapped items of all types of flap. The findings indicate that only one of four types of flap has no negative effect on English lingua franca pronunciation clarity. So, Two factors, the word frequency of the General American and experience, are reasonably correlated with flap intelligibility.

Roberts et al. (2006) wrote a research detecting the glottalization process in non-urban regions of Vermont where the dialect is dying out. The social factors are sex and age. Forty-seven Vermonters participated in the interview to record their pronunciation. Their age is from three to eighty years. Generally, glottalized /t/ is determined by the phonological environment. The results indicate that glottalization is an attractive characteristic of Vermont speech, widely noticed in adolescent speech. Linguistic behavior helps better interpret the terms examined. Furthermore, historical, sociocultural, and phonetic factors are used as cues to interpret results convincingly.

Harris et al. (1990) studies the speech of New York and London to provide evidence that glottalization is a lenition process that is not in line with variation theory. That phonetic interpretation of this arrangement of elements is determined by certain phonological conditions, which result in glottal stops in British speech and flaps in American speech. They find that the occurrence of lenition (the glottalization process) completely differs from articulating certain variations over another (the dialect variation).

Foulkes, Docherty, and Watt, 1999 cited in Roberts et al. (2006) conduct a study on children to examine glottalization acquisition in Tyneside. The findings show that glottal /t/ is used well. The children articulated preaspirated glottalization in which the alveolar gesture precedes the laryngeal stop because they prefer simplified patterns. Furthermore, this pattern is widely used by young women caring for children due to the frequent contact between the articulation of children and their caretakers. That is why they are affected by female-led changes.

Fabricius (2000) conducts a study on glottalization in modern RP, titled "T-glottaling between Stigma and Prestige," examined factors such as class, region, parental origin, sex, and school. The research emphasizes the way young people from the upper middle class pronounce glottal stops in their final words, specifically in southwest London, Midlands, and North-west London. The study finds that glottal /t/ is articulated similarly by both genders in interview styles and pre-consonantal environments. However, region differences do not affect glottalization production. Fabricius concludes that depending on how appreciated and

embraced glottalization is by female participants, it could eventually become a prestige variety in the speech of upper-middle-class.

Alrasheedi (2022) examines the flaps and trills in the Arabic dialects that are most often spoken in Saudi Arabia, Najdi and Hijazi. Data from 730 sentences is collected from participants. Results shows that when /r/ is word-initial or follows a consonant, it appears as [r], while /r/ appears as [r̥] following a consonant. The Najdi dialect violates the sonority hierarchy, indicating that rhotics in those dialects is flexible to consonants that come before them, but not vowels.

Osmik (2009) studies aspiration, interdental fricative, and /r/. He realizes that the aspirated /t/ facilitates clarity of pronunciation among non-native speakers as the realization of interdental fricative /t/ does not decrease the clarity of terms. Moreover, experience and word frequency with an American accent lead to flap clarity.

According to these studies, speakers from different regions face problems in articulating glottal and flapped allophones while aspirated allophone problems are somehow little. In this research, the researcher focuses on how to solve problems in articulating these allophones by references to the phonetic rules interpreted by Yule (2010) which determine the correct articulation of these allophones by nonnative learners in Iraq.

### 1.2 Phonological Rules

The sound /t/ can be pronounced differently in different verbal environments. It occurs in initial, medial, and final part of the word. Regarding the initial Position, it is not easy to differentiate between /t/ and /d/ as both are voiceless since /d/ is devoiced. Hung (2014) said that one way we can distinguish between them is the aspiration process, as /t/ submits to aspiration while /d/ remains unaspirated. For example:

<i>tip</i>	<i>[t<sup>h</sup> Ip]</i>
<i>tan</i>	<i>[t<sup>h</sup> æn]</i>

For the medial Position, /t/ occupies the intervocalic position. Hung states that /t/ is the final consonant sound of the preceding stressed syllable, pronounced as /d/ by Americans. In this case, we have flapped /t/. For example (ibid):

<i>ate</i>	<i>[ate]</i>
<i>Metal</i>	<i>[mɛtəl]</i>

Concerning the final position, Hung specifies that the main difference between the minimal pair /t/ and /d/ is that /t/ shortens the preceding vowel when it is in the final position while /d/ does not. That is why /t/ is articulated as /d/ in American accent. The following examples clarify the explanation (ibid):

<i>hit</i>	<i>[hɪ̃t]</i>
<i>set</i>	<i>[sɛ̃t]</i>

For duration contrast, voiced sounds are preceded by long vowels, which is remarked by Chen (1970), who mentions that American English lengthens the vowel preceding /d/ but British English does not, which is the hint of perceptual difference between voiced and voiceless plosive sounds. In this case, we have glottal /t/

The process of assimilation is formulated when the /t / sound is affected by its neighboring phonemes, the consonant cluster. Hung (2014) states that the sound /t/ loses its aspiration when preceded by /s/, where the noise is demolished during the articulation of /t/. For example:

*Street*                      [stri:t]

Hung also states that when /n/ and /ŋ/ occur in a stressed syllable and come before /t/ which occurs initially in an unstressed syllable, the /t/ is assimilated to the preceding sound to be nasalized. For example (ibid):

*twenty*                      ['twenni]

*going to*                      ['gDnnə]

The sounds /t/ and /ʃ/ are homorganic sounds combined to be affricate /tʃ/ when /t/ occurs before /ʃ/. For example (ibid):

*suggest* /sə'dʒest/        *suggestion* /sə'dʒestʃ(ə)n/

*exhaust* /Ig'zɔ:st/        *exhaustion* / Ig'zɔ:stʃ(ə)n/

In this situation, /tʃ/has all the qualities of /t/, which makes the preceding vowel shorter than usual in the final position. The combination /tʃ/ integrates/t/ and /j/ sound for example (ibid):

*Fortune*    ['fɔ:tʃu:n] (British English) or ['fɔ:tʃ(ə)n] (American English)

### 1.3 Characteristics of Flapping

Flapping is not a random process. There are various situations where the /t/ sound is flapped. Firstly, The word *butter* [ˈbʌtə] is pronounced as [ˈbʌrə] with a flapped /t/ since it occurs in an intervocalic situation where the preceding syllable is stressed (Vaux, 2000). This example copes with the definition of Akmajian et al. (1984), who says that flapping occurs in the intervocalic position of /t/, where the first vowel is stressed.

Furthermore, the sound /t/ is pronounced as a voiced /d/ in words ending in – ity, such as *city* ['siti] to be ['sɪr] (Eddington, 2007). In addition, flap [ɾ] occurs when /t/ exists between /r/ and a vowel, for example: the word *party* [ˈpa:rti] is articulated as [ˈpa:rri]. One of the causes of flapping is a jaw lowering in certain positions. However, native speakers deal with flapping as a matter of intuition, as they know when to apply flapping (Vaux, 2000). Eddington (2007) finds in his data analysis that people use flapping by analogy to consider the morphological and phonetic context where /t/ occurs.

Vowel length and word stress are essential to determine the /t/ sound type. In addition, when the flapped sound is posited between vowels. It is said to be phonological conditioning

because it is affected by stress. So, it depends on a system, not a random process (Vaux, 2000). Morphological conditions affect stress; although *capitalistic* and *militaristic* words share the exact stress contours, *capitalistic* is flapped, whereas *militaristic* is not. The reason behind that is in *capital* [ˈkæpɪtəl], /t/ precedes an unstressed syllable (vowel), so it is flapped, whereas in *military* [ˈmɪlɪ,teri], /t/ precedes a stressed syllable (vowel), so it is not. We also have nasal flapping when /t/ occurs after /n/ in compound numerals and fast speech, such as the word *ninety-nine* in which the /n/ sound is nasalized (Ibid).

#### 1.4 Levels of Flapped /t/

Speakers can use the flap [ɾ] on two levels, word level and sentence level. For example, *total* [ˈtəʊd(ə)] encompasses flap [ɾ] on a word level whereas *I hit it* [aɪ hɪt ɪt] contains flap [ɾ] on a sentence level. However, flap [ɾ] can not be found in the initial or final position of the sound /t/ on the word level, but on the sentence level, it can be applicable as it needs to occur between two vowels as in *let it pass* [led ɪt pa:s]. (Ant, n.d.:1)

Moreover, the flap /ɾ/ should occur in an unstressed syllable. In the sentence: *Sara met her before*, /t/ of *met* [meɪt] is flapped out of being on a word boundary as the following word *her* is an unstressed word with low duration in its production. (Ibid)

#### 1.5 Glottalization Features and Its Phonetic Environment

In British English, the glottalization phenomenon significantly impacts many phonemes, such as /t/, /k/, /p/, and /tʃ/. The current study will be limited to the /t/ sound, which has an allophone named glottal stop [ʔ] pronounced at the glottis with a silence (Wells, 1982).

The glottal stop [ʔ] is pronounced when the airflow is blocked in the throat. It occurs in the medial position before the final syllable /n/ sound. For example, the word *cotton* [ˈkɒʔən]. The glottal stop [ʔ] is also produced when a word ends with /t/ and the upcoming word begins with a stop consonant, as in *the cat took my cake* [ðə kæt tʊk maɪ keɪk]. We can conclude that older speakers flap while younger ones glottalize because it depends on practice. However, people in the Western United States utilize glottal stops (Eddington & Taylor, 2009).

We can say that American English speakers tend to use flaps in the word *better* [ˈbɛɾər] and the word *put* [pʊɾ] while British English speakers tend to use glottals such as [ˈbɛʔər] and [pʊʔt]. However, low-prestige speakers in Metropolitan New York tend to use prevocalic glottals, considered foreignism (Wilson, 1993). Roberts et al. (2006) say that adolescents in the United States usually use glottal stops.

The glottalization phenomenon is a complex variable in British English. The premier studies by Prudgill (1974) in Norwich, Romaine (1987) and Reid (1978) in Edinburgh, and Macaulary (1977) in Glasgow expose that glottal /t/ is articulated by low prestige to show stylistic and social class variation (Roberts, 2006). T- glottalization articulates the sound /t/ as a glottal stop where the oral gesture stop is omitted. It is used in British varieties more than American varieties. It is proved by Robinson (2009 cited in Eddington & Taylor, 2009) who says that T- glottalization is a characteristic of any American accent and one of numerous instances of how American and British English are diverging rather than convergent, at least

when it is pronounced.

Low-prestige varieties use the glottal stop in Great Britain (Trudgill 1974; Macaulay 1977; J. Milroy et al. 1994 cited in Eddington, 2009). On the other hand, in Cardiff Wales, it is used by high social class (Mees 1987 cited in Eddington, 2009)

Roberts et al. (2006) remark that there are differences between glottal reinforcement and replacement. Glottal reinforcement is defined as a phonological process that includes partial articulation of the /t/ sound as a glottal stop sound and as a phoneme /t/. For this reason, it is named the preglottalization phenomenon. Contrarily, glottal replacement is the total substitution of the /t/ phoneme into a glottal stop sound, called t-glottalization. The current study is highly concerned with glottal replacement rather than glottal reinforcement.

### *1.6 Flapping and Aspiration*

Linguistic factors, phonetic origin, and sociolinguistic factors affect the flapping process. Concerning the phonetic context, flapping occurs in the middle of the word, not in the initial position as with aspirated [t<sup>h</sup>], which must mainly occur in the word's initial position to meet aspiration characteristics. Furthermore, stress placement is needed to meet flapping characteristics as it needs unstressed syllables followed. On the other hand, aspiration should be followed by a stressed syllable to meet aspiration conditions. We can say that flapping and aspiration are mainly determined by the phone after them (Vaux, 2000). Sociolinguistically, using flapping is different from others in that community. In other words, they show their social class by their linguistic features.

### *1.7 Flapping and Glottalization*

Flapping is widely found in American, Australian, and New Zealand English, whereas British English mainly uses glottal [ʔ]. Particularly, working-class speakers and the press use glottal [ʔ] as the press is associated with that class, but it is not found in upper-class speech to show solidarity and to indicate specific social meaning. So, it is a sociolinguistic reason behind using the /t/ sound (Alderton, 2022).

It is said that working-class Cockney speakers utilize tapping in their articulation as a correct variant, while glottalization is considered too rough. However, tapping is associated with informality and authority. British pop singers have demonstrated this by using an 'American' vocal style. The use of flapped characterizes the broadcast speech of RP [ɾ] especially by men when reporting news (Barrera, 2015; Sivertsen, 1960; Wells, 1982 cited in Alderton, 2022).

### *1.8 Flap and Tap*

Flap and tap are somehow similar processes. Nevertheless, some scholars have distinguished between them. For that reason, this title is utilized to demonstrate these processes. Ladefoged (1996) distinguished between flaps and taps by stating that the most common way to make a flap is to move the tongue tip forward to lightly touch the alveolar ridge after retreating it behind it. Conversely, he finds that taps are pronounced when the tongue tip moves directly to a contact point within the alveolar or dental region. For that reason, the tap is said to be a dental sound.

Crystal (2011) states that flapping is one pronunciation of the American language as it has many accents, while Wardhaugh (2002) suggests that flapping is a variety of English language. Carr (1993) said that /t/ voiceless alveolar stop in intervocalic position, which turns to be voiced alveolar tap [ɾ]. He considered this rule to show that it is not a random process. Wardhaugh (1995) states a flap is a fast tongue tap on the alveolar ridge. Rogers' view (1991) is entirely divergent and states that nasal tap can be found in words like *winter* [winrə]. However, Ladefoged et al. (1996) note that linguistic literature does not distinguish between flap and tap.

## 2. Methodology

The focus of the current investigation is the correct articulation of allophones of /t/ by non native learners. The data are collected from students at English department in Iraq. Thus, a quantitative method was most suitable design to be used in this study because it depends on counted numbers of errors done by learners. Concerning the model, Yule (2010) is the adopted model of analysis of this research. The researcher selects twelve words to be articulated by both males and females since they are foreign learners of English language to detect miscommunication that they may face. The data were recorded by tape recorders in laboratory of sounds.

### 2.1 Participants

Twenty Iraqi English students from the University of AlMaarif, fourth stage, participated in the current study of the allophones of the /t/ sound. Ten of them are males and the rest are females. They were born and living in Iraq to show the effect of language learning on their practice. In addition, they have various dialects that are related to different regions.

Regarding the age, they are twenty, twenty-one, and twenty-five. Every participant's reading of three distinct word lists is recorded, including aspiration, flapping, and glottalization. Each student is given twelve words to read. These utterances include aspirated, flapped, and glottal sounds. So, this research handles a study of the speech of AlMaarif University College students by examining sociolinguistic differences among them.

### 2.2 Procedures of the Study

In this study, the researcher administers a listening task for students to realize the accurate phoneme accurately. This is done in the laboratory of sounds as there are headphones. The students are given three utterances to decide the accurate phoneme and provide them with feedback before beginning the test. After that, the data are recorded with their two versions: /t/ sound and its allophones (i.e., aspirated, flapped, and glottal). As for the duration, the students participate in two interview sessions, which lasted 120 minutes, and each student lasts six minutes to pronounce twelve words. However, the two sessions are tape-recorded. Then, the researcher would replay the recorders to transcribe and analyze the articulated terms. Regarding the position, the token of words includes variants of /t/ occurring at the beginning, middle, and end of the word.



### 3. Results and Discussion

Two tables are implied below which include data to be analyzed to get results. The first Table represents femininity performance, while the second represents masculinity performance.

Table 1. The allophones of the sound /t/ by males

Words	Transcription	Aspirated [t h]	Flapped t[r]	Glottal t[ʔ]
<b>cotton</b>	[kɔʔn]	0	0	10
<b>butter</b>	[b^ rə]	0	10	0
<b>latter</b>	[larə]	0	10	0
<b>winter</b>	[wɪnrə]	0	0	10
<b>little</b>	[lɪrl]	0	10	0
<b>beating</b>	[bi:riŋ]	0	10	0
<b>button</b>	[b^ʔn]	0	0	10
<b>butting</b>	[b^riŋ]	0	2	8
<b>kitten</b>	[k ɪʔn]	0	4	6
<b>Tree</b>	[t^hri:]	10	0	0
<b>Tea</b>	[t^h i:]	10	0	0
<b>Test</b>	[t^hesʔ]	10	0	0

Table 1 provides a descriptive transcription for three variants of the /t/ sound articulated by males. It encompasses aspirated, flapped, and glottal /t/. The results of tape recorded indicate that students face less difficulty producing glottal stop [ʔ] than flapped stop [r]. Nevertheless, they do not struggle to articulate the aspirated /t/ by males as they all accurately pronounce aspirated /t/ with a puff of air. So, the flapped [r] is the most complicated matter they may face. Some words are pronounced in the wrong way. The word *winter* is pronounced as a glottal word rather than a flapped one by all of them as /t/ occurs after nasal [n] which should be flapped, whereas the item *butting* is articulated wrongly as a glottal word by eight, of them which should be articulated as a flapped word as /t/ is in intervocalic position. In addition, four of them faced a problem in articulating the word *kitten* which is pronounced as a word with a flapped sound rather than a glottal sound, which is a word with a glottal sound as /t/ in medial

position followed by nasal [n]. They could not recognize the glottal sound in the word *test* as /t/ is in the final position, so it is glottalized. In sum, the flapped version affected the clarity of words more than unflapped terms. Moreover, the nasal flap type is the most problematic flap /t/, which should occur in an unstressed syllable preceded by a voiced alveolar nasal sound.

Table 2. The allophones of the sound/t/ by females

Words	Transcription	Aspirated [t <sup>h</sup> ]	Flapped t[r]	Glottal t[ʔ]
<b>cotton</b>	[kɒʔn]	0	0	10
<b>butter</b>	[b <sup>h</sup> rə]	0	8	2
<b>latter</b>	[lɑrə]	0	10	0
<b>winter</b>	[wɪnrə]	0	6	4
<b>little</b>	[lɪrl]	0	6	4
<b>beating</b>	[bi:riŋ]	0	10	0
<b>button</b>	[b <sup>h</sup> ʔn]	0	0	10
<b>butting</b>	[b <sup>h</sup> riŋ]	0	2	8
<b>kitten</b>	[kɪʔn]	0	0	10
<b>Tree</b>	[t <sup>h</sup> ri:]	10	0	0
<b>Tea</b>	[t <sup>h</sup> ɪ:]	10	0	0
<b>Test</b>	[t <sup>h</sup> esʔ]	10	0	0

Concerning Table 2, it examines females' articulation at the undergraduate level. The result is that females' pronunciation of aspirated [t<sup>h</sup>] is not problematic as they all accurately pronounce aspiration. On the contrary, the flapped [r] is the most troublesome matter they may face. Some words are pronounced in the wrong way. They faced a problem articulating the word *butting* as most pronounced it as a word with a glottal sound, which should be flapped as it occurs in an intervocalic position. In addition, four students incorrectly articulated the words *winter* and *little* as glottal sounds, which should be flapped. In the word *winter*, the sound /t/ occurs after nasal [n] so it is a nasal flap sound. For the word *little*, the sound /t/ occurs between vowel sound and dark [ɪ] which is a syllabic sound [l], so it is also flapped. The word *butter* is wrongly pronounced as a glottal sound by only two students, and the /t/ sound is in an intervocalic

position. However, the glottal words are pronounced correctly except for the word *test*, in which the final /t/ is not glottalized. In sum, the incorrect articulation remarked by femininity is less than that noticed by masculinity.

#### 4. Conclusion

This study has provided an analysis of the variations in the pronunciation of the /t/ sound among Al-Maarif University College students. It is concluded that analogy represents a lexical procedure of determining the accurate pronunciation of an utterance depending on the similarity between the new word and the acquired one within the speaker's memory without relying on the previously mentioned conditions. So, it is known by native speakers as a way of similarity of the stored lexicon. That is why the non-native speakers find it difficult to determine the precise allophone of /t/ as they do not have many lexical items, which cause ambiguity and cut of communication.

The findings indicate that there are significant differences in how /t/ is conceived throughout various phonetic settings in pronouncing [t<sup>h</sup>], [ʔ], and [ɾ] being commonly employed. Concerning flapping process is a component of sociolinguistics as it reflects social status. For this reason, females more than males use flaps to pretend that they are prestigious, showy, and intelligent. In this respect, being educated leads to an appropriate articulation produced by non-native speakers. Instead, they cause ambiguity as a result of unawareness of the original form; for example, *writer* is changed into *rider* whose sense is communicated. So, one should rely on context to decide the intended meaning. Linguistic factors examined in the current study are allophones' position regarding preceding sound and followed one. For instance, the initial allophone of /t/ is highly connected with the aspiration process.

Regarding the medial position, the word medial glottalization is more frequently used than the word-final glottalization. In this regard the final glottal word is not noticed as in the word *test* [t<sup>h</sup>esʔ]. Generally, the flapping process is associated with the American accent, while the glottalization phenomenon is associated with the British accent. For the Iraqi students, the glottalization is more obvious than flapping. More importantly, one might notice that concerning the glottalization process, the logical analysis identified that males widely used glottal stops of its few rules. In case of aspiration, all speakers could correctly use aspirated [t<sup>h</sup>] with its total characteristics, such as a puff of air.

Throughout tracing the current study, the suggested recommendations are:

1-It was suggested that non-native speakers should be provided with knowledge about the rules of the processes of both flapping and glottalization to avoid the random use. And also they should be acquainted with morphological and phonological positions.

2-It is necessary for both genders, not only women, to be acquainted with evaluating the importance of using flapping [ɾ] in community, which reflects the level of learning they gained from being acquainted with rules of using the appropriate type of /t/ sound in the utterances.

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Appendix

**Research Ethical Approval Form**

Project Title: Variation of the sound 'r' with reference to Al-Basrah university colleges

Name of Lead Researcher: Ehsan Abdul-Kadhim Ismail

Ehsan Ismail (Lead researcher)



I provide participants with an information sheet that describes the main procedures  
I told the participants that their data will be treated with complete confidentiality without divulging their names.  
The participants are 18 years or older to supply consent as they are students in the college.

Please answer the following questions (Y/N)		(Y/N)
1. Will any personal data be generated and/or stored?		Y
2. Will your research involve any of the following?	Photographing Participants	Y
	Audio Recording	Y
	Video Recording	Y
3. Does this research pose any risk of physical danger to the researcher?		N
4. Does this research pose any risk of mental harm to the researcher?		N
5. Will you give the potential participants a reasonable period of time to consider participation?		Y
6. Does your study involve any of the following?	People who are, have been, or are likely to become you clients, students, or clients of the school	Y
	Prison	N
	Children under 18 years of age	N
	People with intellectual or communication difficulties	N
	People in custody	N
	People involved in legal action	N

People entering in a vulnerable group, other than those listed above	Y
People for whom English / Dutch is not their first language	Y
7. Is there any realistic risk of any participant experiencing a detriment to their interests as a result of participation?	N
8. Will you have access to documents containing sensitive data about living individuals? If yes, will you give the consent of the individuals concerned?	N
9. Has the research application or any application of a similar nature connected to this research project been refused ethical approval by another review committee of the College or any external organization?	N

Supervisor's Declaration (where applicable):  
As the supervisor for this project, I confirm that I believe that all research ethical issues have been dealt with in accordance with school policy and the research ethics guidelines of the relevant professional organization. I undertake to continue to review the project and ensure that ethical principles are applied at every stage.

Signed: Muhammad Khaleel Fozaf Date: December 3, 2023

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