Pronunciation of English Velar Nasal (Angma) by Undergraduate Students in Pakistani Universities

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Abstract
Pakistani English (PakE) is an emerging variety of English that is in the process of developing its own norms and standards. Besides, distinguishing lexical and syntactic structures, it also has unique phonological features (Baumgardner, 1993; Hassan, 2004; Rahman 1991). Many Pakistani linguists have discussed unique consonantal and vocalic features of Pakistani English (PakE). However, there has not been any significant research conducted on the pronunciation of English velar nasal or angma /ŋ/ by Pakistani English speakers. This study analyses the pronunciation of English velar nasal by Pakistani English speakers. The sample was selected from 20 undergraduate students of the Department of English studying in the first semester of a large-scale public sector university located in Lahore, Punjab, Pakistan. A number of 20 English lexical items were selected and were divided into three categories according to the distribution of angma in the English language. The items were presented to the participants in diagnostic sentences. PRAAT, the speech and phonetics analysis software, was used to analyse the data. The findings revealed that Pakistani English speakers pronounce angma inaccurately in the medial position and insert velar plosive /ɡ/ in the poly-morphemic words. However, in the final position, angma is pronounced

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correctly by most Pakistani English speakers. The findings highlight that Pakistani English speakers are not concerned about the morpheme boundary and pronounce angma without /ŋ/ coalescence. Thus, it is found that Pakistani English speakers have distinguished pronunciation. The study recommends more research on Pakistani English pronunciation as well.

**Keywords:** /ŋ/ coalescence, English velar nasal, Pakistani English (PakE).

### 1. INTRODUCTION

The global status of English is acknowledged worldwide. It is no longer the sole possession of the British. The total number of non-native speakers is far greater than that of native speakers. Kachru (1986) demonstrated this spread of English in his model of three concentric circles, the inner circle, the outer circle, and the expanding circle (Tajeddin & Pakzadian, 2020). Pakistan stands in the outer circle and Pakistani English is emerging as a distinct variety loaded with innovations that can be attributed not only to different geographical, and social backgrounds but also to the different first languages of the speakers and multilingualism in Pakistan (Mahboob, 2004; Rahman, 2011). Pakistani English (PakE) often referred to as Pinglish, has its own distinctive phonological features (Baumgardner, 1993; Hassan, 2004; Rahman 1991). These phonological features have been documented by various researchers. Most of the research studies are available on the segmental features of Pakistani English.

It is observed that many renowned linguists have expressed their views about World Englishes (WE). Baumgardner (1993, p. 50) believes that World Englishes are “unique and variegated sociolinguistic mosaic” and each variety whether in the process of standardizing or standard is associated integrally with this unprecedentedly “international phenomenon” (Kilickaya, 2009). Each circle of the influential three concentric model of Kachru (1986) (inner, outer, and expanding) shows diverse functions of English and its patterns of acquisition, and world wide spread (Bruthiaux, 2003). Jenkins (2007) asserts that the varieties of inner circle have been codified and defined but outer and expanding circles’ varieties are being gradually standardized. These new Englishes have deviated from native or colonial British or American Englishes and are profoundly affected by co-existing regional or indigenous languages (Mesthrie, 2006). Phillipson (2008) writes that World Englishes is also an outcome of multiculturalism. The role of the English language is being transformed in a global context and forms and uses diverge from a single standard (Crystal, 2003). People can communicate through a plethora of World Englishes (Canagarajah, 2005).

Pakistani English’s (PakE) roots are deeply laid deep in colonial pre-partition British India. Ali (1993, p. 3) wrote, the native languages of South Asia and English grew in diverse directions, “the Germanic group under the influence of Roman Christianity being drawn to Latin and Greek; the Indo-Iranian, bearing affinities to Sassanian-Pahlavi and Sumerian on the one hand, and Persian and Arabic under Islamic influences on the other”. Spear (1965, p. 124) remarked that Macaulay in 1835 with his distinctive English self-complacent pride and imperialist outlook avowed, “we have a great moral duty to perform in India”. The foremost aim was to fashion out a special class
of people who were “Indian in colour and blood but English in taste and character, in morals and intellect” and to promote “British English literature and science” through English medium schools, colleges, and universities (Costa, 2019).

The spread of English in British India happened because of the economic and social mobility accompanying it. English was acquired either by formal schooling or by direct contact with native speakers of English. The learners received input in South Asia locally, indigenized, and non-native because native English-speaking teachers were scanty to fulfil the demand. The majority of the English teachers were Indians. As a result of non-native teachers’ coaching, varieties of English in India came into existence. These factors have contributed to the institutionalization and evolution of South Asian English as a native variety (Mahboob, 2004). The local uses and needs of English, and the limited interaction with the native speakers of English brought about the ‘nativization’ of English in the Indian sub-continent (Baumgardner, 1993). Sidhwa (1993, p. 213) writes, “although Raj has since been banished, and the Empire repossessed, the status of English in Pakistan is still intact. This phenomenon is the most important reason for contributing to the “emergence of English as a World Language” (Gul, 2022).

The research is based on the following questions:
1. How do Pakistani undergraduate students pronounce English velar nasal (angma) at word final position?
2. How do Pakistani undergraduate students pronounce English velar nasal (angma) at word medial position?

2. LITERATURE REVIEW

2.1 Pakistani English (PakE)

Pakistani English (PakE) is a non-native English variety developing its innovative norms and standards (Irfan, 2022). It is categorized in the Kachruvian outer circle and has its roots in pre-partition British India (Mahboob & Ahmar 2004). English in Pakistan has been influenced by the local languages. The influences are on its phonology, syntax, and lexis (Rahman, 2011). Its phonology has its own distinctive features. A handful of research studies are available on the phonology of Pakistani English. Very few studies analyse the supra-segmental features. Usmani (1965) focuses on the stress patterns of Pakistani English. Rahman (1991), Mahboob and Ahmar (2004) and Afsar and Kamran (2011) discuss the consonants of Pakistani English. This section presents a summary of previous research available on distinct segmental features of Pakistani English vowels and consonants.

Mahboob and Ahmar (2004), in their study, have divided the vowels into two main groups. The invariant vowel realizations are found in the first group which are spoken by the Pakistani speakers without significant variation in Received Pronunciation (RP), whereas the second group has variant vowel realizations articulated by Pakistani speakers. They label PakE a rhotic variety of English based on the collected samples. Mostly, the participants pronounce [r] in given contexts, for instance, ‘force’ [fɔ:rs] and ‘warm’ [waːrm]. However, the postvocalic [r] is uttered inconsistently, for example, ‘start’ and ‘letter’. It is noted that the Pakistani speakers
articulate dental stops rather than the RP dental fricatives, such as, [t] and [d] in ‘north’ [nɔːrt] and ‘then’ [dɛn] (Mahboob & Ahmar, 2004, p. 1011).

Mahboob and Ahmar (2004, p. 1012) report a few more PakE phonological features as non-reduction of unstressed vowels in spellings such as, ‘immediately’ [ɪmˈmɪdʒətli]. The /s/ is noted only in the connected speech. Epenthesis is another feature that was perceived in a consonant cluster. The first consonant was a voiceless sibilant and the second consonant was a stop, such as, ‘stronger’ [strəʊŋə] and ‘start’ [strəːt]. In British English voiceless plosives are aspirated in the stressed position and unaspirated in the unstressed positions, whereas Pakistani English speakers do not make this distinction. Mahboob and Ahmar (2004) point out that Pakistani English speakers articulate the voiceless stops /t/ and /p/ in words such as ‘letter’ or ‘happy’. Afsar and Kamran (2011) also confirm this finding and mention that double letters are germinated by Pakistani English speakers.

Rahman’s (1991) research population was based on Urdu, Punjabi, and Pashto speakers. He mentions that Pashtu speakers produced voiceless dental fricative as voiceless dental stop /ʒ/. He views that degree of rhoticity in PakE is intricately related to sociolinguistic factors. Urdu language does not have a phonemic separation between /v/ and /w/. The same is the case with Pashto speakers, for example, ‘love’ [luo] (Rahman, 1991, p. 33). He also describes that Punjabi speakers break up the consonant cluster by inserting a short vowel /ɔ/ between the stop and the sibilant as in ‘speak’ [səpi:k] and ‘stall’ [səːtəl]. However, Pashto speakers do not undergo any issues with the consonant cluster because Pashto smoothly allows these clusters. Finally, Pakistani speakers do not aspirate stops in word initial position if they happen to occur before a vowel, as the word ‘kit’ is realised as [kɪt].

Afsar and Kamran (2011) discuss that Pakistani English speakers produce English dental fricatives /θ/ and /ð/ as dental stops and /tʃ/ as dental stops. Syed et al. (2017) also mention that Pakistani speakers produce a rhotic /r/ with a strong trilling and they cannot perceive the difference between English /r/ and their own rhotic /r/. It is also difficult to make a distinction between /v/ and /w/ for Pakistani English speakers.

According to Rahman (1991), these two sounds are assimilated in Pakistani English. Mahboob and Ahmar (2004) report that their participants produced variants of /w/ for both /v/ and /w/. Afsar and Kamran (2011) had a different finding and reported that /w/ is produced as a labiodental approximant /ɾ/. So, in Pakistani English, /v/ corresponds to British English /w/. Syed et al. (2017) also confirm this finding that in Pakistani English, /w/ is [+sonorant and −round]. The lip rounding of English /w/ and friction of English /v/ is absent.

It is interpreted that the allophonic variation of /l/ that exists in British English is not maintained in Pakistani English. In British English /l/ is produced clearly at the onset position while it has a dark or velarized pronunciation at the coda position (Roca & Johnson, 2007), whereas in Pakistani English /l/ is clear at both the onset and the coda position (Afsar & Kamran 2011; Mahboob & Ahmar 2004; Rahman 1991; Syed et al. 2017). However, Syed et al. (2017) report that Pakistani English speakers are able to perceive the difference between clear and dark /l/ variants which means that they can acquire these as well. Afsar and Kamran (2011) report that Pakistani English speakers produce palato-alveolar fricative /ʒ/ as /ʃ/. Syed et al. (2017) confirm this finding that in British English /ʒ/ is produced as [-sonorant and +strident] whereas in Pakistani English it is produced as [+sonorant and -strident].
Significantly, it is found that no previous research study is available on the production of this sound. Syed et al. (2017) report the findings of an unpublished study in their paper that in the words ‘sing’ and ‘pink’ by Saraiki speakers produce the sound /ŋ/ as /sinɡ/ and /piŋk/ instead of [siŋ] and [piŋk]. They mention that English velar nasal is realized as a combination of alveolar nasal and velar stop by Pakistani English speakers. However, the details are not available and the claim comes from an unpublished study.

2.2 English Velar Nasal [ŋ]

The phonological status of the velar nasal is unique because of the positional restrictions that it implies— that it is not allowed at the onset position and can only occur at the medial and final positions. Its phonemic status is also contested. However, Giegerich (1992) argues that the presence of minimal sets such as ‘ran’ [ran], ‘ram’ [ram], and ‘rang’ [rang] in almost all varieties of English shows that English clearly has three nasal phonemes with three different places of articulation.

Bailey (2019) argues that in some parts of England, the velar nasal has different variants. There is an absence of ng-coalescence which results in post-nasal [ɡ] in words such as ‘young’ and ‘singer’. These will be pronounced as [jʊŋɡ] instead of [jʊŋ] and ‘singer’ as [sɪŋɡə] instead of [sɪŋə]. In these areas, ‘finger’ and ‘singer’ are pronounced in the same way. Bailey (2019) mentions that this absence of ng-coalescence was not geographical in the past. According to Wells (1982), the post-nasal [ɡ] started disappearing in London English in the 16th century. Before this, all varieties of English had non-coalesced pronunciation of velar nasal and the post nasal [ɡ].

Roach (2009) mentions that in BBC pronunciation if there are letters ‘nk’ in the middle of a word, a /k/ will always be pronounced. Thus, the pronunciation of the word ‘sink’ will be /sɪŋk/. However, if the letters ‘ng’ occur medially they will be pronounced in two different ways: a) without ng coalescence as [ŋɡ], and b) with ng coalescence as [ŋ]. The difference between the two pronunciations is because of the morphological structure of the words. If [ŋ] occurs word medially, it will be pronounced with velar plosive as [ŋɡ] if the word has one single morpheme, for example, in the word ‘finger’ /fɪŋɡə/, velar nasal occurs word medially and it has only one morpheme. The sound [ŋ] will be pronounced without velar plosive if it is at the morpheme boundary for example in the words ‘singer’ and ‘hanger’ we have two morphemes: ‘sing’+‘-er’, ‘hang’+‘-er’. Hence, these will be pronounced as /sɪŋə/ and /hæŋə/.

Word ending with the letters ‘ng’ is always pronounced with ng coalescence as [ŋ]. There is an exception to the above-mentioned rules with reference to the comparative and superlative suffixes. The word ‘long’, for example, will be pronounced as /lɒŋ/ without the velar plosive sound. However, it will be pronounced with velar plosive in its comparative /lɒŋɡə/ and superlative form /lɒŋɡɪst/. Roach (2009) says that we can then treat comparative and superlative forms of adjectives as single morphemes to understand this rule of velar nasal pronunciation.

As a result of this, the rule must be modified: it must state that it is comparative and superlative. Roach (2009) argues that English speakers are ignorant of this rule, however, when a foreigner mispronounces this sound (pronounces /ŋɡ/ instead of /ŋ/ or vice versa), the native English speakers can notice that a mispronunciation has occurred. Ladefoged and Johnson (2014) present the following spectrogram of nasal...
consonants. The spectrogram below shows that in the pronunciation of velar nasal /ŋ/ velar pinch is visible. The second and third formants of the vowel before /ŋ/ come closer for the velar pinch.

3. METHODS

The current study seeks to analyse the production of velar nasal /ŋ/ by Pakistani English speakers. It aims to analyse whether Pakistani English speakers are able to pronounce the words containing /ŋ/ correctly or not. The /ŋ/ sound occurs word medially and word finally. So, this study analyses the pronunciation of velar nasal in all the possible environments at word medial and final positions.

Twenty undergraduate students both male and female from a large-scale university located in Lahore, Punjab, Pakistan were selected. They were students in the Bachelor of Science in English (BS English) program having a background in phonetics and phonology. The researchers used the random sampling technique. The mother tongue of the students was Urdu (11 students) and Punjabi (nine students). Twenty English lexical items were selected which were divided into three categories according to the distribution of angma in the English language.

Table 1. Selection of Angma lexical items

<table>
<thead>
<tr>
<th>η at word final position (pronunciation=ŋ)</th>
<th>Words with η in the medial position (pronunciation = ŋg)</th>
<th>Words with η in the medial position (pronunciation=ŋ)</th>
</tr>
</thead>
<tbody>
<tr>
<td>song</td>
<td>finger</td>
<td>singer</td>
</tr>
<tr>
<td>king</td>
<td>hunger</td>
<td>hanger</td>
</tr>
<tr>
<td>hang</td>
<td>anger</td>
<td>strongly</td>
</tr>
<tr>
<td>long</td>
<td>longer</td>
<td>things</td>
</tr>
<tr>
<td>wrong</td>
<td>single</td>
<td>swinging</td>
</tr>
<tr>
<td>touching</td>
<td>bangles</td>
<td>singing</td>
</tr>
<tr>
<td>feeling</td>
<td></td>
<td>jungle</td>
</tr>
</tbody>
</table>

The test words were used in six diagnostic sentences.
- The famous singer was singing a song in front of a king in the jungle.
- Only a single boy had broken his finger while touching the hanger.
- He strongly criticized the wrong things.
- I can hang out with friends for a long time without any feeling of hunger.
- I can no longer tolerate his anger.
- The girl with bangles is swinging in the park.

The participants were unaware of the objective of the experiment so that data could be as natural as possible. They were provided the list of the above-mentioned sentences and were given time to study it for a few minutes. After familiarizing them with the sentences, they were asked to read them aloud at their own pace. The researcher recorded the responses of each individual in PRAAT software at 8000HZ.

The data was analysed using PRAAT software (https://www.fon.hum.uva.nl/PRAAT/). PRAAT helps phoneticians analyse, synthesize, and manipulate speech (Boersma & van Heuven, 2001). Each word containing /ŋ/ was annotated in PRAAT at the segment layer. The pronunciations were marked as correct or incorrect. The pronunciation was marked as correct or incorrect by comparing it with the pronunciation of the respective words in Standard British
English. The standard British English pronunciation of the test words has been taken from https://topphonetics.com/.

### Table 2. Position of η in lexical items

<table>
<thead>
<tr>
<th>η at word final position (pronunciation=ŋ)</th>
<th>Words with η in the medial position (pronunciation =ŋg)</th>
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</tr>
</thead>
<tbody>
<tr>
<td>song /sɔŋ/</td>
<td>finger /fɪŋg/</td>
<td>singer /sɪŋə/</td>
</tr>
<tr>
<td>king /kɪŋ/</td>
<td>hunger /hæŋgə/</td>
<td>hanger /hæŋŋə/</td>
</tr>
<tr>
<td>hang /hæŋ/</td>
<td>anger /æŋɡə/</td>
<td>strongly /streŋɡli/</td>
</tr>
<tr>
<td>long /lɒŋ/</td>
<td>longer /lɒŋɡə/</td>
<td>things /θɪŋɡ/</td>
</tr>
<tr>
<td>wrong /rɒŋ/</td>
<td>single /sɪŋɡl/</td>
<td>swinging /swɪŋɡŋ/</td>
</tr>
<tr>
<td>touching /ˈtʌŋɡŋ/</td>
<td>bangles /ˈbæŋɡlz/</td>
<td>singing /sɪŋɡŋ/</td>
</tr>
<tr>
<td>feeling /ˈfiŋɡŋ/</td>
<td>jungle /dʒʊŋɡl/</td>
<td></td>
</tr>
</tbody>
</table>

The theoretical framework of this study can be demonstrated in Figure 1. The study analysed the pronunciation of English velar nasal at three positions i.e., non-coalesced form in word medial position, coalesced form in word medial position, and at word final position.

![Figure 1. Theoretical framework.](image)

### 4. RESULTS

The results are presented in the following sub-sections corresponding to the distribution of angma.

#### 4.1 η in the Final Position

Figures 2 and 3 show that most of the participants were able to pronounce the angma at word final position correctly without inserting an additional velar plosive /ɡ/. However, the results differ if the following sound is a consonant or a vowel. In the diagnostic sentences, the words ‘long’, ‘wrong’, and ‘touching’ had a following consonant while the words ‘song’, ‘king’, ‘hang’, and ‘feeling’ had a following vowel.
Pakistani English speakers can pronounce it correctly when it occurs before a consonant, however, they insert a velar plosive /ɡ/ when it is followed by a vowel. The spectrogram of a participant saying ‘song’ and ‘king’ have been presented below where angma has been pronounced clearly without the insertion of /ɡ/.

Figure 2. Percentage of correct responses for monomorphemic words in final position.

Figure 3. Percentage of correct responses for polymorphemic words in final position.

Figure 4 demonstrates spectrograms of ‘song’ and ‘king’.

Figure 4. Spectrograms of ‘song’ and ‘king’.
4.2 η in the Medial Position (Pronunciation = ŋ g)

The results of this section are interesting and reveal that Pakistani English users ignore the morpheme boundary and pronounce mono-morphemic and poly-morphemic words containing angma in the medial position in the same way i.e., by inserting /ɡ/.

![Percentage of Correct Responses for Monomorphemic Words: Words with η in the medial position (Pronunciation = ŋ+g)](image)

**Figure 5.** Percentage of correct responses for monomorphemic words in medial position.

Figure 5 shows that in the monomorphemic words, all the participants inserted /ɡ/. So, their pronunciations of the words were marked as correct. The spectrogram in Figure 6 shows the pronunciation of the word ‘anger’ by a participant. The /ɡ/ sound has been pronounced by the participant as can be seen from the spectrogram, the burst and extra duration after the burst are visible.

**Figure 6.** Spectrogram of ‘anger’.

Most of the poly-morphemic words containing angma in the middle were pronounced incorrectly i.e., by Pakistani English speakers. The graph in Figure 7 shows that 10% of participants pronounced ‘singer’ and ‘hanger’ correctly while 20% pronounced ‘singing’ correctly.
The spectrograms of ‘finger’ /ˈfɪŋə/ and ‘singer’ /ˈsɪŋə/ have been compared in Figures 8 (the spectrogram of ‘finger’ (mono-morphemic)) and 9 (the spectrogram of ‘singer’ (poly-morphemic)) to show that these are pronounced in the same way by Pakistani English speakers. The words ‘strongly’ and ‘things’ were however pronounced correctly because angma is in the pre-consonant position in both words, i.e., /l/ and /s/ appear after angma in these words.
Figure 10 shows the spectrogram of double angma. In the case of the double angma sound, it has been pronounced correctly at word final position. However, in the medial position, /ɡ/ is inserted as can be clearly seen from the spectrogram.

5. DISCUSSION

The findings reveal that Pakistani English (PakE) is an emerging variety. Kachru (1986) categorises Pakistani English in the outer circle. Baumgardner (1987) also believes that PakE is a systemized indigenous variety. The linguists view that velar nasal was once pronounced without the /ŋɡ/ coalescence across all varieties of English. Gradually /ɡ/ started disappearing in the late modern English period. Bermúdez-Otero and Trousdale (2012) discuss that in present-day English [ŋɡ] combination occurs only in pre-vocalic environments or in mono-morphemic items such as ‘finger’. In English, the non-coalesced [ŋɡ] form still exists in the North West and West Midlands of England. This non-coalesced form also exists in Pakistani English.

The current research reveals that Pakistani English speakers do not realize the difference between the non-coalesced [ŋɡ] form and the coalesced [ŋ] form. They pronounce the mono-morphemic and poly-morphemic words containing /ŋ/ in the same way. The results show that Pakistani English speakers pronounce the words ‘finger’ and ‘singer’ in the same way as /fɪŋɡə/ and /sɪŋɡə/.

Syed et al. (2017) English velar nasal is phonologically realized as a combination of the alveolar nasal and velar stop, however, this research argues that Pakistani English speakers produce non-coalesced [ŋɡ] form which is a combination of velar nasal and velar stop. Bailey (2019) argues that in English spoken in the Northwest and West Midland parts of England, there is an absence of ng-coalescence which results in post-nasal [ɡ] in words such as ‘young’ and ‘singer’. These are pronounced as [jʊŋɡ] instead of [jʊŋ] and singer [sɪŋɡə] instead of [sɪŋə]. In these areas, ‘finger’ and ‘singer’ are pronounced in the same way. Pakistani English is also similar to these varieties.

The results of this study also go in line with the study conducted on Polish ESL learners by Gonet et al. (2012). Their results reveal that Polish ESL learners find difficulties in the correct production of the velar nasal in different contexts (i.e., intervocalic angma, pre-consonant angma, double angma, word final angma).
6. CONCLUSION

It is concluded that Pakistani English has unique phonological features. The study reveals that most of the Pakistani English speakers pronounce the non-coalesced form of /ŋɡ/ at word medial position irrespective of the monomorphemic or polymorphemic words. In monomorphemic words non-coalesced form is considered correct; however, in polymorphemic words, the coalesced form should be used. Only in the final position, some Pakistani English users use the coalesced form i.e., /ŋ/. In the case of double angma as well, the Pakistani English speakers were able to use the coalesced form at the word final position, however, they could not produce coalesced form at the word medial position (as shown in Figure 10).

It is implied that a further study can do a detailed analysis of the environmental factors such as the words and phonemes following the /ŋ/ sound, and how a pause after the final position of /ŋ/ affects its pronunciation. The results of this study have revealed that the pronunciation of angma has shown different phonetic representations when occurring in the pre-vocalic or pre-consonantal position.

Furthermore, this research study was limited to only 20 students with Urdu and Punjabi as their first languages. A further study can take a diverse and representative sample with more participants. A consideration of various first languages spoken in Pakistan can also provide insightful cross-cultural variations. A research study can also be conducted to check the effects of exposure and instruction on the pronunciation of this sound.

REFERENCES


