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Merger of /i:/ and /I/ in Pakistani English

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Abstract

In Asian Englishes, it is observed that the two front vowels /i:/ and /I/ are not distinguished as two different phonemes. The researchers have revealed that the two vowels are merged in local varieties of English (Hung, 2000; Deterding, 2007; Gonzalez & Alberca, 1978 as cited in Bautista & Gonzalez, 2006; Zuraidah, 2000 as cited in Bautista & Gonzalez, 2006). This study is conducted to observe whether the distinction between /i:/ and /I/ is maintained in Pakistani English. 40 subjects (20 male and 20 female) were recorded using minimal pairs in a career phrase. Praat was used for measuring formant values and durational properties of the two vowels. The conclusions were drawn that there was no merger of the two vowels in Pakistani English as was observed in other varieties of Asian Englishes.

Key words: Asian Englishes, Pakistani English, Praat, Acoustic analysis, Formants

1. Introduction

In South Asia, the number of English speakers is huge as the countries have large populations. The countries include Bangladesh, Bhutan, Nepal, Pakistan, India, Sri Lanka and Maldives. In all these countries, English is viewed as a language of power and as a means of economic uplift and upward social mobility. In a region of multiethnic population, English serves as a language of communication. In the words of Garesh (2006):

> English serves as a link language … among the South Asian countries constituting the South Asian Association for Regional Cooperation (SAARC). Rather than being considered a colonial liability, it is now accepted as an asset in the form of a national and international language representing educational and economic progress. (p. 90)

English in the official language of Pakistan; it is language of communication in offices, courtrooms, educational institutions, etc. English, as spoken in Pakistan, has been recognized as a different variety of English on various levels of morphology, syntax, phonology, etc. by many scholars (Baumgardner 1990; Baumgardner, Kennedy, & Shamim, 1993; Kennedy, 1993; Tallat, 1993, 2002, 2003; Rehman, 1990). The current study focuses on phonological aspect of the variety and examines the vowels. Out of many languages spoken in Pakistan, the Punjabi language was selected for the analysis as it represents the 61% of the population. Pakistani society is a heterogeneous with multiple ethnic groups comprising 61% Punjabi, 21% Sindhi, 8% Pathan, 3% Balochi, 3% Mohajir, and 2% Kashmiris (Hickey, 2005). The study under discussion is an attempt to examine if Pakistani English merges the two vowels /i:/ and /I/ or identifies them as two different phonemes.

2. Review of Literature

English is considered lingua franca that Asians now share with one another and the rest of the world. Due to the influence of native languages, regional English varieties are emerged with some distinctive features that distinguish them from native English. Zuraidah (2000, as cited in Bautista & Gonzalez, 2006, p. 133) described that in Malaysian English, the two front vowels /i:/ and /I/ are merged. Therefore, the speakers do not maintain distinction between ‘feel – fill’, ‘bead – bid’, etc. In another study, Gonzalez & Alberca (1978, as cited in Bautista & Gonzalez, 2006, p.134) have observed a similar phenomenon (merger of /i:/ and /I/) in Philippine English. According to Kachru (2005), in Indian English, there is no distinction between a strong and weak vowel. Deterding (2007) has stated about Singapore English that “the most widely described feature of the vowel system…is the absence of a length distinction between pairs of vowels, so that ‘beat, bit’ tend to sound the same…” (p. 22). Hung (2000) concluded about Hong Kong English that the speakers could not distinguish between /i:/ and /I/. Mahmood, Zafar and Perveen (2011) in their study on front vowels of Pakistani English have observed that Pakistani speakers maintained the difference between the two vowels /i:/ and /I/.

3. Materials and Methods

3.1 Participants

The participants were selected from among the students of BS (English) of University of Sargodha. Among 40 participants, 20 were male and 20 were female, all with Urdu as their first language and comprised the age group of 18 - 25. It was also considered that the subjects are exposed to English for at least ten years in their educational career.

3.2 Material

3.2.1 Selection of Words

The study was limited to the two front vowels i.e. /i:/, /**I**/. Monosyllabic word list recordings were made for the analysis in the /hVd/ frame. Minimal pairs were selected and recorded in a career phrase. Below you can find a list of words used in the study:

/hVd/ = hid, heed, head, had

The purpose of choosing /hVd/ context was to reach an appropriate conclusion about the realization of these vowels because it is established “that vowel formant patterns are affected not only by the identity of the vowel but also by the consonant environment”. (Hillenbrand, Clark, & Nearey, 2001, p. 748) Further, the consonants on the onset position have more effect on the vowels than those on the coda. (Hillenbrand et al., 2001; Roeder, 2009)

The effect of /hVd/ or ‘null context’ on the vowel formants was negligible as compared to formant values of vowels in isolation (Steven & House, 1963, as cited in Roeder, 2009). “The frame /h-d/ is particularly suitable for studies of English vowels, since (i) /h/ has so little influence on following vowels, and (ii) it so happens that a real English word results for nearly every "pure" vowel in this sequence.” (Wells, 1962, para 54)

3.2.2 Recordings

The words were recorded directly on computer Acer Aspire 5735z in a noise free atmosphere. Recordings were made in a soundproof room of FM Radio Station of University of Sargodha.

4. Procedure

There were total 40 participants (20 male and 20 female). Each participant was asked to speak 4 words with /hVd/ context. The total vowel tokens for analysis were rounded to (40x4) 160 with 80 for each of the two vowels i.e. /i:/ and /I/. Praat was used for acoustic analysis.

5. Measurement of Vowel Duration

Vowel length is an important phonemic factor in many languages, including English. Vowels may have same quality but may not have same length, i.e. we may judge one vowel from another on the basis of quality and/or quantity. Measuring vowel length becomes more significant in Asian context where the probability of merger of the two phonemes is high. Hence, it was decided to measure the duration of the two vowels along with their formant values to observe if they differ in quality or quantity or both.

6. Statistical Analysis

The data were subjected to statistical analysis using computer software MSTAT-C (Russell and Eisensmith, 1983). Completely randomized design was employed for analysis of variance (ANOVA) and Fisher's LSD test was used to compare significance at < P 0.05.

7. Analysis

7.1 Analysis of Male Sound

Separate analysis of male and female sounds was made because of the potential difference in the formant frequencies. Male speakers have big mouth cavities resulting into low formants as compared to female speakers.

7.2 /hVd/ Context

7.2.1 High Front Vowel /i:/

All the male speakers realized this vowel as a high front vowel. F1 varied from 320Hz (minimum) to 460Hz (maximum) and F2 from 1940Hz (minimum) to 2800Hz (maximum) respectively. The average formant values of F1 and F2 were 374Hz and 2277Hz respectively. The statistical analysis (Table 1) shows that there is significant difference (at $P \leq 0.05$) between the two formants. The variation among speakers is insignificant, which shows that all the speakers displayed similar pattern while pronouncing the vowel.

Table 1. Analysis (Type III SS) of /i:/ in /hVd/ context (male sound)

Source	DF	Sum of squares	Mean square	Fisher's F	Pr > F
Subjects	19	515048.333	17760.287	3.625	0.397
Formants	1	54316235	54316235	11084.946	0.006
Name*Formants	19	430015	14828.103	3.026	0.43

7.2.2 High Front Vowel /I/

The vowel is also realized as high front vowel. Minimum F1 was 365Hz and maximum 535Hz. F2 remained 1550Hz (minimum) and 2590Hz (maximum). The averages were 432Hz for F1 and 2060Hz for F2. Statistical analysis shows (Table 2) highly significant (at $P \leq 0.05$) results for formants. The change of speakers did not affect the formants significantly.

Table 2. Analysis (Type III SS) of /i/ /hVd/ context (male sound)

Source	DF	Sum of squares	Mean square	Fisher's F	Pr > F
Subjects	19	759558.75	26191.681	85.524	0.085
Formants	1	39771735.4	39771735.42	129866.89	0.002
Name*Formants	19	662827.083	22856.106	74.632	0.091

7.2.3 /i:/ vs /I/

The speakers realized the two vowels as different phonemes. It was observed that the speakers differentiated between the two phonemes as short /I/ and long /i:/ vowel. The

phoneme /i:/ was realized as a higher and more front vowel than /I/. Two speakers exhibited similar F1 values for /i:/ and /I/ and one, similar F2 for the same vowels. The figure below shows the differences of realization of the two phonemes.

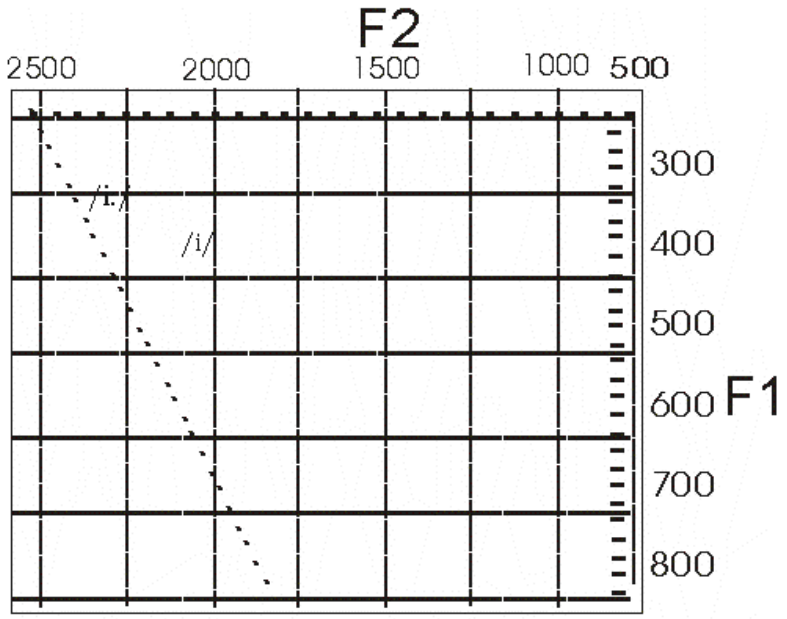

Figure 1. Average formant values of vowels by Pakistani male speakers

The statistical analysis (Tables 3 & 4) showed significant differences between /i:/ and /I/ except for the F1 values.

Table 3. ANOVA Summary (male sound)

Source	SS	df	MS	F	P
Treatment b/w groups	94281197.5	3	31427065.83	1533.12	<.0001
Error	2377861.667	116	20498.8075		
Ss/Bl					
Total	96659059.17	119			

Table 4. Tukey HSD Test

HSD[.05]=96.65; HSD[.01]=117.65	
F1/i:/ vs F1/I/ nonsignificant	HSD = the absolute [unsigned] difference between any two sample means required for significance at the designated level. HSD[.05] for the .05 level; HSD[.01] for the .01 level.
F2/i:/ vs F2/I/ P<.01	
F1/i:/ vs F2/i:/ P<.01	
F1/i:/ vs F2/I/ P<.01	
F1/I/ vs F2/i:/ P<.01	
F1/I/ vs F2/I/ P<.01	

The general pattern of the realization of the two vowels remained same. The duration of the vowels showed greater variation in length i.e. /i:/ was realized as long and /I/ as short vowel (Fig 2).

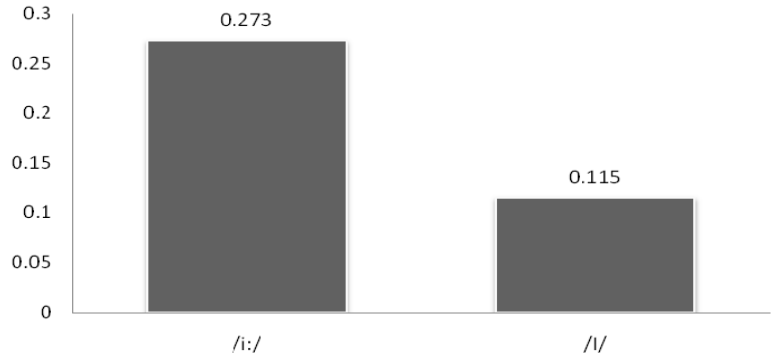

Figure 2. Relative vowel duration of male Pakisani speakers

7.3 Analysis of Female Sound

The analysis of female sounds was done separately as the formants of female speakers are generally greater than those of their male counterparts. The process of analysis remained identical.

7.4 /hVd/ Context

The results of the analysis are discussed below.

7.4.1 High Front Vowel /i:/

Like their male counterparts, the female speakers realized the phoneme as a high front vowel. The average F1 and F2 remained 431Hz and 2725Hz respectively. The minimum and maximum values of F1were 270Hz and 540Hz and of F2, 2380Hz and 3150Hz. Statistical Analysis shows significant variation between the values of F1 and F2 (Table 5). There was insignificant difference among the speakers in pronouncing the vowel /i:/.

Table 5. Analysis (Type III SS) of /i:/ in /hVd/ context (female sound)

Source	DF	Sum of squares	Mean square	Fisher's F	Pr > F
Subjects	19	614783.75	21199.44	1.357	0.602
Formants	1	78909445.4	78909445.42	5050.205	0.009
Name*Formants	19	773917.083	26686.796	1.708	0.55

7.4.2 High Front Vowel /I/

The speakers realized the phoneme as high front vowel. Statistical analysis exhibited that there was significant variation in the values of F1 and F2 while the variation among the speakers remained insignificant (Table 6). Average F1 was 501Hz and F2, 2429Hz. The lowest F1 was 318Hz and the highest 590Hz. F2 remained 2100Hz (minimum) and 2780Hz (maximum).

Table 6. Analysis (Type III SS) of /i/ /hVd/ context (female sound)

Source	DF	Sum of squares	Mean square	Fisher's F	Pr > F
Subjects	19	647965.683	22343.644	2.424	0.474
Formants	1	55742760.2	55742760.15	6048.477	0.008
Name*Formants	19	541282.35	18664.909	2.025	0.512

7.4.3 /i:/ vs /I/

Statistical analysis shows significant differences in the formants of /i:/ and /I/ except in F1 (Tables 7 & 8).

Table 7. ANOVA Summary (female sound)

Source	SS	df	MS	F	P
Treatment b/w groups	135056959.1	3	45018986.37	1987.42	<.0001
Error	2627630.867	116	22651.9902		
Ss/Bl					
Total	137684590	119			

Table 8. Tukey HSD Test

HSD[.05]=101.6; HSD[.01]=123.67		
F1/i:/ vs F1/I/	nonsignificant	HSD = the absolute [unsigned] difference between any two sample means required for significance at the designated level. HSD[.05] for the .05 level; HSD[.01] for the .01 level.
F2/i:/ vs F2/I/	P<.01	
F1/i:/ vs F2/i:/	P<.01	
F1/i:/ vs F2/I/	P<.01	
F1/I/ vs F2/i:/	P<.01	
F1/I/ vs F2/I/	P<.01	

Like male speakers, the female speakers pronounced the two vowels as different phonemes. The tendency to pronounce /i:/ longer than /I/ was quite observable (Fig 3).

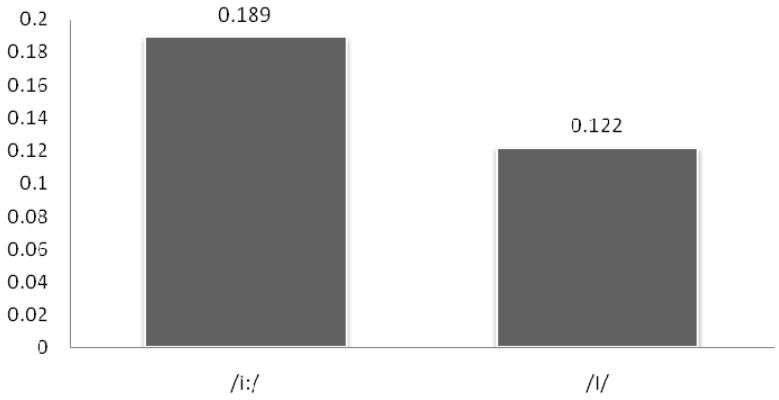

Figure 3. Relative vowel duration of female Pakisani speakers

The phoneme /i:/ was realized as a higher and more front vowel than /I/ which was also realized as a high front vowel. Unlike male speakers, no deviation in the general pattern of realizing the two vowels was observed. The pattern to realize /i:/ higher and more front remained a constant feature (Fig 4).

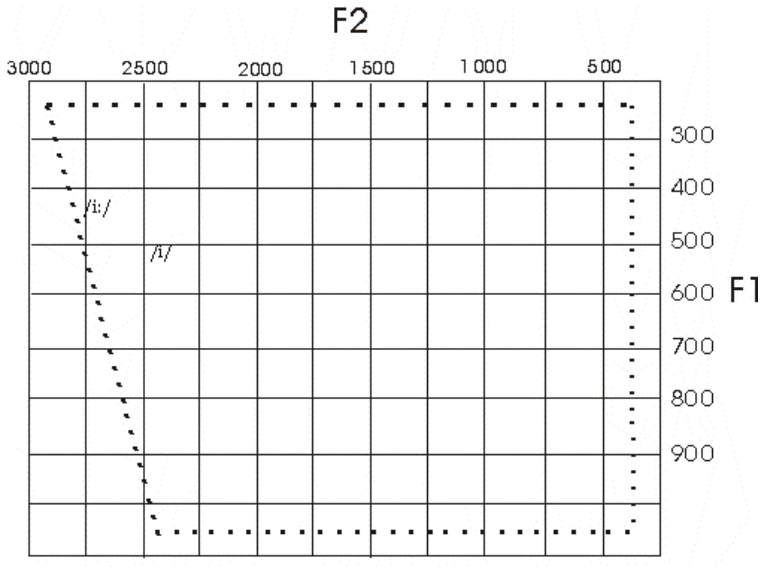

Figure 4. Average formant values of vowel of Pakistani female speakers

Regarding the length of the two vowels, it was observed that male speakers pronounced /i:/ much longer than their female counterparts. Male speakers pronounced /i:/ in 0.273 seconds while female speakers pronounced the same vowel in 0.189 seconds. The /I/ vowel was almost pronounced with the same length by both groups (Fig 5).

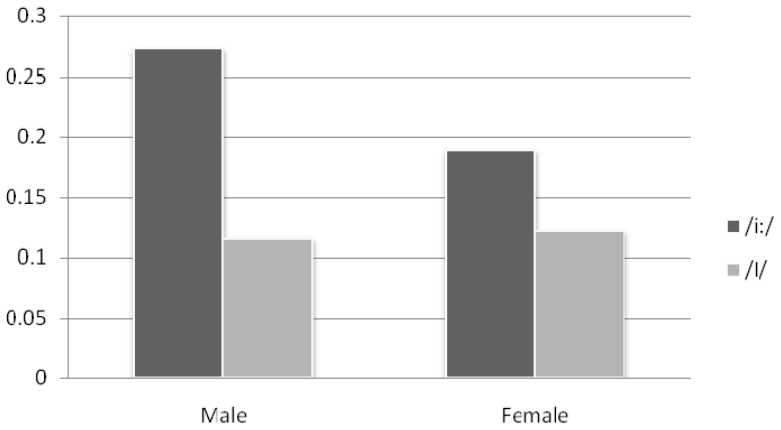

Figure 5. Comparison of vowel duration between male and female speakers

8. Conclusion

To conclude, it may be said that Pakistani English does maintain the difference between the two phonemes, i.e. /i:/ and /I/, not only according to the quality of the vowels but also according to the quantity. As far as the two vowels are concerned, it is observed that Pakistani variety follows the pattern of RP and AmE. The two native varieties distinguish the two

vowels as different phonemes; the difference lies not only in their quality but also in their quantity. The only difference then remains between Pakistani variety and the two native varieties is that the natives pronounce /i:/ with more raised and front tongue as compared to their Pakistani counterparts. The same is true for the /I/ vowel (Fig 6 & 7).

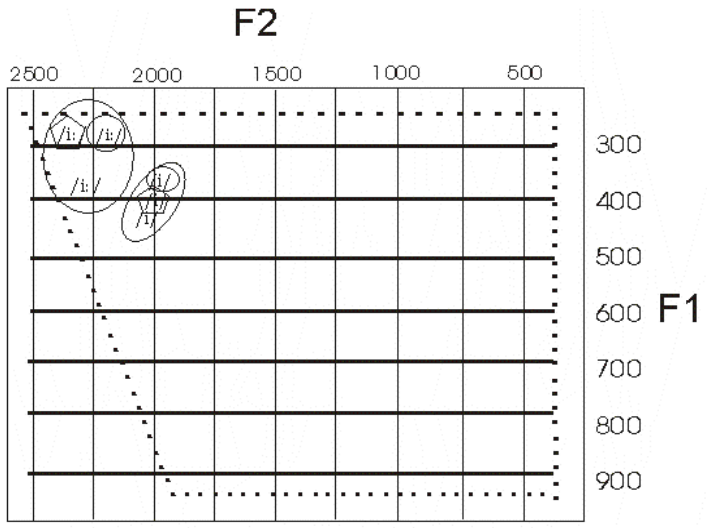

Figure 6. Comparison of vowels as spoken by Pakistani male speakers with American male speakers (inside pentagon) as given by Peterson & Bamey (1952) and RP (circled) as given by A.C.Gimson in Crutendon (2008)

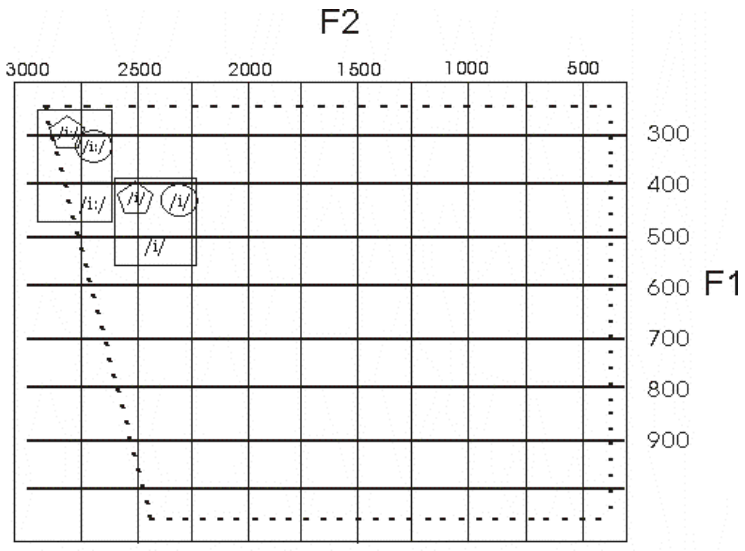

Figure 7. Comparison of vowels as realised by Pakistani female speakers with female speakers of RP (circled) as given by A.C.Gimson in Crutendon (2008) and American female speakers (inside pentagon) as given by Peterson & Bamey (1952)

9. Implications

In South Asia, where English plays an important role as a second language, there is surely an increasing recognition of a South Asian variety of English. In fact, many local Englishes (e.g. Pakistani English, Indian English, etc.) are emerging which are affected not only by the users'

L1 but also by interaction with other L2 users of English. McKay (2003) reflected that "as an international language, English belongs to its users, and as such it is the users' cultural content and their sense of the appropriate use of English that should inform language pedagogy" (p. 13 as cited in Caine, 2008, Para 13).

As far as the current study is concerned, we found it visible evidence that the realization of the vowels by Pakistani speakers is different from other regional or international varieties of English. For most ESL teachers, the thing they concern most is how they help students get rid of mother tongue accent and become more English native-like. Based on the current study, it is suggested that PE exists in such an ESL context. We have to admit the fact that the impact of our first language interference in pronunciation is so enormous that we can improve it but the mission of getting rid of the accents seems not easy to be achieved.

Another important advantage of this research is that it would pave way for future researches as the scholars may take on studies on vowels, diphthongs or triphthongs, intonation and stress patterns in Pakistani English, etc. It might prove a motivation for the local researchers to further enhance the research to such a level as to make Pakistani English a recognizable international variety of English.

Finally, it is important to note the limitations of the study due to the numbers of the participants and the term of the investigation. The participants were restricted to only Punjabi L2 speakers of Sargodha city; hence, the findings of the study may not extend to English L2 learners from other L1 backgrounds. Furthermore, the empirical condition of the study does not reflect real-life communication situations. Bearing these cautionary notes in mind, I nevertheless suggest that this kind of empirical study does provide some important insights and some valid pedagogical possibilities in the teaching and learning of intelligible pronunciation.

References

Baumgardner, J. (1990). The indigenization of English in Pakistan. *English Today*, 6, 59-65. http://dx.doi.org/10.1017/S0266078400004545

Baumgardner, J., Kennedy, A., & Shamim, F. (1993). The Urduization of English in Pakistan. In J. Baumgardner (Ed.), *The English language in Pakistan* (pp. 83-203). Karachi: Oxford University Press.

Bautista, M., & Gonzalez, A. (2006). Southeast Asian Englishes. In B. Kachru, Y. Kachru & C. Nelson (Eds.), *A handbook of world Englishes* (pp. 130-144). Oxford: Blackwell Publishing Company.

Bautista, M., & Gonzalez, A. (2006). Southeast Asian Englishes. In B. Kachru, Y. Kachru, & C. Nelson, (Eds.), *A handbook of world Englishes* (pp. 130-144). Oxford: Blackwell Publishing Company.

Caine, M. T. (2008). Do you speak global?: The spread of English and the implications for English language teaching. *Canadian Journal for New Scholars in Education*, 1 (1). [Online] Available: http://www.cjnse-rcjce.ca/ojs2/index.php/cjnse/article/viewArticle/22 (December

10, 2010).

Cruttendon, A. (2008). *Gimson's pronunciation of English*. London: Arnold. p. 99.

Deterding, D. (2007). *Singapore English*. Edinburgh: Edinburgh University Press. p. 22.

Deterding, D. (2007). *Singapore English*. Edinburgh: Edinburgh University Press. p. 22.

Garesh, R. (2006). South Asian English. In B. Kachru, Y. Kachru, & C. Nelson, (Eds.), *A handbook of world Englishes* (pp. 90-113). Oxford: Blackwell Publishing Company. http://dx.doi.org/10.1002/9780470757598.ch6

Hickey, R. (2005). South Asian Englishes. In Hickey, R. (Ed.), *Legacies of colonial Englishes* (pp. 536-558). Cambridge: Cambridge University Press. http://dx.doi.org/10.1017/CBO9780511486920.022

Hillenbrand, J. M., Clark, M. J., & Nearey, T. M. (2001). Effects of consonant environment on vowel formant patterns. *Journal of the Acoustical Society of America*, 109 (2), 748-763. http://dx.doi.org/10.1121/1.1337959

Hung, T. (2000). Towards the phonology of Hong Kong English. *World Englishes*, 19(3), 337-356. http://dx.doi.org/10.1111/1467-971X.00183

Hung, T. (2000). Towards the phonology of Hong Kong English. World Englishes, 19(3), 337-356. http://dx.doi.org/10.1111/1467-971X.00183

Kennedey, A. (1993a). A bribe by any other name...: Terms of gratification in Pakistani English. In J. Baumgardner (Ed.), *The English language in Pakistan* (pp. 204-211). Karachi: Oxford University Press.

Mahmood, A. Zafar, S. & Perveen, S. (2011). Front vowels of Pakistani English. *International Journal of Academic Research*, 3(5-II), 303-306. [Online] Available: http://www.ijar.lit.az/pdf/13/2011%2813-55%29.pdf (November 7, 2010).

Peterson, G. E., & Barney, H. L. (1952). Control methods used in a study of the vowels. *Journal of the Acoustical Society of America*, 24, 175-184. http://dx.doi.org/10.1121/1.1906875

Pillai, S., Don, Z. M., Knowles, G., & Tang, J. (2010). Malaysian English: an instrumental analysis of vowel contrasts. *World Englishes*, 29(2), 159-172. http://dx.doi.org/10.1111/j.1467-971X.2010.01636.x

Rehman, T. (1990). *Pakistani English: The linguistic description of a non-native variety of English*. Islamabad: National Institute of Pakistan Studies, Quaid-e-Azam University.

Roeder, R. (2009). The effects of phonetic environment on English /æ/ among speakers of Mexican heritage in Michigan. *Toronto Working Papers in Linguistics*, 31. [Online] Available: http://twpl.library.utoronto.ca/index.php/twpl/article/viewFile/6090/3092 (September 20, 2010)

Russell, D. & Eisensmith. (1983). MSTAT-C. Crop Soil Science Department, Michigan State

University, USA.

Tallat, M. (2002). *The form and function of English in Pakistan* (Doctoral dissertation). [Online] Available: http://eprints.hec.gov.pk (August 10, 2010).

Tallat, M. (1993). Lexical variation in Pakistani English. In J. Baumgardner (Ed.), *The English language in Pakistan* (pp. 55-62). Karachi: Oxford University Press.

Tallat, M. (2003). Pakistani English: A sociolinguistic variety. *Journal of Research*, 4, 17-30. [Online] Available: http://bzu.edu.pk/jrlanguages/Vol-4%202003/Dr%20Mubina%20Tallat-2.pdf (August 10, 2010)

Wells, J. C. (1962). *A study of the formants of the pure vowels of British English* (Master's thesis). [Online] Available: http://www.phon.ucl.ac.uk/home/ wells/formants/index.htm (July 25, 2010).

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