

Stress Placement in English Bi-Syllabic and Tri-Syllabic Suffixed Words and their Roots by Pashto Speakers in Khyber Pukhtunkhwa (Pakistan)

Afzal Khan
Mustanir Ahmad
Prof. Dr. Noor Afroze Khuwaja

Abstract

*This study determines the pattern of English (primary) word stress in Bi-syllabic and Tri-syllabic suffixed words and their roots by Pashto speakers in Khyber Pakhtunkhwa Pakistan and the effect of such affixation on stress placements. These suffixes in English Language are called shifter, they shift strong stress to the antepenultimate (third from the last), similarly penultimate (second from the last), and ultimately (last) syllables, as well as those suffixes that do not shift strong stress to other syllable. The data was collected from sixteen native speakers of Pashto Language in Khyber Pakhtunkhwa, Pakistan, by recording their oral-reading of a card, containing a selection of words. The findings indicated that primary stress pattern varies among bi-syllabic, and tri-syllabic suffixed words. These four types of English suffixes assert a variety of degree on the stress placements by the participants. The most significant observation of this research study demonstrated that suffixes *ese* and *ade* have the least effect on participants' stress placements, because maximum of the primary stress maintained on first syllable in their suffixed words along with their root words, but do not shift to last syllable. Subsequently, having determined that the correct primary stress is on last syllable in these types of suffixed words, the pattern of stress placement on first syllable causes most incorrect productions. Although suffixes *ese* and *ade* do not appear as regularly as other suffixes, e.g., *ic*, *ity*, and *cy*, the findings disclosed that there was extreme unawareness of the strong stress shifting effect among Pashto speakers in Khyber Pakhtunkhwa, which needed further attention.*

Key Words: Stress placement, Bi-syllabic and Tri-syllabic suffixed words, Pashto speakers, Khyber Pakhtunkhwa Pakistan.

1. Introduction

When we speak, our speech is not monotonous; it has its own rise and fall which ultimately render understanding in context of sounds. There are certain aspects of speech sounds that allow the listener to understand the speech to complete the process of communication. A syllable occupies a central place in this communicative aspect of speech. According to Krcmova (2007) a syllable is "the easiest and the most immediate articulatory unit of functional elements of speech that is satisfactory for communication". Peter Roach (1991) regards a syllable phonetically as "consisting of a center which has little or no obstruction to airflow and which sounds comparatively loud; before and after this center (beginning and end of the syllable) there will be greater obstruction and acoustic resonance". (Roach, 1991, p. 67). Closely attached to the syllable is the idea of stress, which has been explained by linguists in various ways (e.g. Ladefoged, 2001; Teschner & Whitley, 2004; Kingdon, 1958). Ladefoged (2001, p. 276) defined stress as "the use of extra respiratory energy during a syllable". Further, Teschner and Whitley (2004, p. 1) defined it as "the greater prominence or loudness that a vowel or syllable exhibits within a word, in at least two degrees: strong/

weak (or primary/secondary)". According to Kingdon (1958), there are two types of stress, namely, word (lexical) Stress and sentence (syntactical) stress. Word stress is defined as "the relative degree of force used in pronouncing the different syllables of a word of more than one syllable" Kingdon (1958).

There are some salient features that give prominence to primary word stress that become more elaborate when we look at primary word stress from two possible angles. First, from the perceptual point of view and second, from the point of production. Regarding production Roach believes that the greater muscular energy implied for stressed syllables as opposed to unstressed syllables in a word. From the perceptual point of view, it is prominence in syllables, (1991, pp.85-86). About the prominence in syllables, all phoneticians agree, that what make a syllable prominent are the following factors or components responsible for prominence in syllables: loudness, length, pitch, and a quality of a vowel. It is important to say that these factors complement each other in creating prominence in stressed syllables. They do not work in isolation; rather they are part and parcel to one another in speech. Therefore, it is sometimes difficult to distinguish between them as they are all for one, and one for all in speech production and perception. However, not all of the factors are either equally important or always present but some of them at a time can render intelligibility.

Primary word stress, as the name signifies, is the placement of strong stress on certain syllables within a given word. Some words carry no word stress (mostly in the case of monosyllabic words) on the other hand some words has multiple stresses, with varying degrees of strength.

Besides investigating English primary stress pattern in bi-syllabic, and tri-syllabic stems and their roots, of Khyber Pakhtunkhwa English speaking students, whose first language is Pashto, this study also demonstrates whether the addition of different types of suffixes in multi-syllables words will assert an effect upon stress placement of Khyber Pakhtunkhwa Pashto speaking students. The analysis of this study is consisted in two main parts, English primary stress patterns produced by the subjects and the effect of suffixation on patterns of primary stress placements. The first part of this research is further sub-divided into (1) Primary stress pattern in bi-syllabic stems and their roots; and (2) Primary stress pattern in tri-syllabic stems and their roots. The second part of the this study is divided into four sub-sections by the types of suffixes involved, namely (1) ade and ese, stems of suffixes; (2) tory and cy stems of suffixes; (3) rious and ity stems of suffixes; and (4) cial or tial and ic, stems of suffixes.

2. Literature Review

Stress in English language is a very complex phenomenon. For the last few decades, a number of scholars and researchers have been occupied with continuous efforts to identify the underlying rules for the placement of stress. A reputed pioneer in this field was Kingdon (1958), who put forth a suffix-based approach. He claimed that adding a suffix to a root influence, the stress placement in words. He also observed that the stress placement in a word also depends largely on the origin of that word, i.e. where from the word had originated; Latin, Greek, Scandinavian, or English type of a word, or rather compounds. Although his contribution towards stress placement in English language nevertheless suffers from the fact that he did not distinguish between strong and weak syllables. The suffixes-based approach of English primary stress placement is generally accepted nowadays. Likewise, it is also generally acknowledged that if there are no suffixes attached to the roots, it depends on the properties of various syllables where the stress falls (Fudge, 1984, p.12). Fudge (1984) merged parts of all renowned scholars like Kingdon, Chomsky, and Halle's approaches and produced an extensive rationalization, where primary stress falls. His approach is based on

counting back the number of syllables from the end of an English word which he calls the 'stressable portion'. Stressable portion "is what is left of the word when certain suffixes and prefixes have been removed from it" (1984, p.17). After the suffixes and prefixes are removed from the word, it depends on the structure of the stressable portion.

Tremblay (2008) conducted a research on Prosodic constraints in the acquisition of English primary stress placement in words by French Canadian L2 learners. This study deals with English Primary stress placement in English words by Second Language learners, investigating English primary stress on words by French Canadian L2 learners of English. Primary Word stress is a particularly relevant linguistic phenomenon, because it reflects the shape of the prosodic structure that underlies L2 learner's production of L2 words. Since Canadian French and English differ extensively in their prosodic or supra-segmental structure, they provide an ideal constellation of native language (L1) and target language for looking into this phenomenon.

It is observed that native speakers of Canadian French follow two different developmental paths in the learning of English primary stress placement in words, one which yields a target-like prosodic structure and one which does not. It is further argued that it is difficult for L2 learners to recover from the non-target-like prosodic grammar they have acquired. Analyzing the learning stages that L2 learners follow during second language acquisition, when learning total abstract L2 prosodic representations is important for understanding how L2 learning takes place in term of primary stress placement. It unveils the ways in which the inter-language grammar is prosaically constrained at different developmental stages of L2 learners and why not all L2 learners ultimately reach target-like prosodic representations in their speech production.

Jana L. (2012) conducted a research study on, Stress and intelligibility: pronunciation of secondary school students of English by Czech learners. In this research study the researcher focuses on supra-segmental features of speech, namely primary word stress placement. As she has been a teacher at a Secondary School of Civil Engineering for three years she therefore chose to conduct a research on English primary stress placement by second language learners of Czech and its impact on students' intelligibility, as well as overall progress in their pronunciation competence. Moreover the researcher adhered to focus on the learner's pronunciation and practicing, which have a positive effect on students, resulting in their greater self-confidence in the command of English. The reason she chose to dedicate her work solely to English primary word stress pattern by second language learners is, as significant number of scholars claimed supra-segmental features, to which primary word stress belongs, is of great importance in speakers' intelligibility. Moreover, for Czech English as second language learners especially this fact may cause considerable problems as Czech language is a syllable-timed language, while on the other hand English is a stress-timed language. Tomkova confirms the typical situation in terms of learning English as a second language by Czech students, stating that most Czech English language learners pronunciation only consists in segmental practice, neglects the dynamic character of English language and thus results in poor comprehension of authentic speech even after relatively long training (2003).

Hence, students often feel discouraged by the fact they are either not understood or more often, by their inability to understand recorded English speech, as this one is the most frequent phenomenon they have a chance to experience during English lessons. Therefore, the hypothesis of this study goes that supra-segmental features (English primary stress placement in words) of speech, stress in particular, are the most important factors concerning the intelligibility of a speaker's speech.

Bot (1996) correctly states that knowing a problem is not solving it, but this knowledge can help to increase the attention on relevant information on the input level, helping the solution of the problem. Therefore, when students are constantly exposed to wrong input, the output will definitely not be correct at all. Also, when a preliminary student is exposed to unknown words during second language learning, his tendency is to look for a pattern within his first language. Pater (1997, p. 235) also argues that “it is uncontroversial that learners of a second language, at least in the earliest stages, make use of first language rules most of the time, parameter settings, or constraints for word level primary stress placement”.

3. Methodology

The present study is designed for experiments along with the observation of native speakers of Pashto language and their primary stress placement in English bi-syllabic and tri-syllabic suffixed words and their roots. The experimental design is chosen in order to base the study on more scientific and reliable bases. The approaches for the study include both qualitative and quantitative approaches. The qualitative approach provided the theoretical materials for the study, which was obtained from the study of the Primary stress pattern in English language and research worked, conducted in other languages of the world. This theoretical material was supported with the observations of English language teaching experts. From this theoretical material a quantitative study based on the performance level of Pashto speakers production in primary stress placement in English words.

In qualitative approach of the study, the stress pattern of English words by different people were studied across the world. The previous works of stress pattern in English words by non-native speakers, helped us to identify the issues within the languages selected, and the issues across the language in learning the other language i.e. English as (L2) is learned with L1 background. The work was further verified in the light of the English root words and their eight suffixed forms chosen for the study. Later on the issue was confirmed quantitatively through the data collected from Pashto native speakers in Khyber Pakhtunkhwa Pakistan.

When the qualitative study of root words and their stems along with the effect of suffixation in English language by L2 English learners specified the issues involved, it led us to seek the effects of the L1 (Pashto Language) primary stress placement on Pashto speakers. The approach adopted for the issue was a quantitative one, in which the data was obtained from native speakers of Pashto with English language learning background. The data for the study was obtained through scientific tools of recording, by means of MP3 Players of high quality. This quantitative approach settled the issues in the present study.

The attachments of these suffixes, that is -ity, -rious, -cial/tial, -ic, -ese, -ade, -tory, and -cy to the root words, shift the pattern of stress placement in English bi-syllabic and tri-syllabic words. These suffixes were selected based on their effect on shifting primary word stress placement. Suffixes, ity and, rious shift primary stress placement to the antepenultimate (third from the last) syllable. Suffixes, cial/tial and, ic shift primary word stress placement to the penultimate (second-from-the-last) syllable. Suffixes, ese and, ade have an effect on shifting primary word stress placement to the ultimate (last) syllable. These three pairs of suffixes are called “shifter” (Teschner & Whitley, 2004, p.33). These suffixes in English language are classified as stress-shifting since “primary stress shifts whenever a “shifter” suffix is attached to the root of the word.” (Teschner & Whitley, 2004, p.33). The final two suffixes, tory and, cy are classified in English language as stress-neutral which means that they do not shift the primary stress from one syllable to another. (Teschner & Whitley, 2004, p.33).

3.1 Participants

The data was collected from a sample of sixteen participants. These participants were from seventeen to thirty years of age. These participants were selected from four different institutions. Four participants were chosen from each college. Two government and two private colleges were selected for quality sampling. These Consisted of, Government degree college Matta, Swat, Government Post Graduate, Jehanzeb College Saidu sharif Swat, Swat Public School and College (SPS) and Excelsior College Fizagat Swat. In all these institutions English was taught as a compulsory subject. All the participants were native speakers of Pashto language. They all had background knowledge of English by studying it for more than ten years in school as a compulsory subject. The medium of instruction in all these colleges and institutions was English. All these participants belonged to different localities of Khyber Pakhtunkhwa in Pakistan.

They had studied English in different institutions. The sample, selected represents nearly all the major areas in Khyber Pakhtunkhwa, where Pashto language is spoken. Some of these participants had very sound background knowledge of English language. They have been included in the study, in order to see whether their participation does make any difference or not.

3.2 Test Material

In order to investigate the primary stress placement in English words by Pashto speakers, 26 bi-syllabic and tri-syllabic root words, while 31 bi-syllabic and tri-syllabic suffixed words were selected. These stems (31 in number) were formed by attaching the selected eight affixes. These affixes are ity, rious, cial/tial, ic, ese, ade, tory, and, cy, see appendix A and B for details.

The attachment of these affixes to the root words shifts the pattern of stress placement in English words of bi-syllabic, and tri-syllabic, stems.

3.3 Data Collection Procedure

These 31 suffixed forms and their 26 root words, in total 57 were written on cards individually, root word on one side of the card and its suffixed form on the other side of the card had written and the participants were asked to pronounce them loudly and clearly. These words were pronounced by the participants that were recorded. Each participant had to pronounce the selected word for three times.

3.4 Data Analysis

The data for the present study was recorded by MP3 players of high quality in order to remove ambiguities in the analysis. The data was recorded and then demonstrated through tables in result portion of the data.

The data obtained was heard with the help of the high quality speakers. The primary stress placement in all the words were transcribed and marked by the symbol of English primary stress (') and attached in tables in result portion. The primary stress placement in English root words and their suffixed forms produced by Pashto speakers were identified, by listening to the recorded data, which was obtained from the participants with Pashto background. These root words along with suffixed forms had been produced differently by different participants. Once the Root word or its stem was heard by listening time and again, the production of words by the participants was recognized in this way. The data was then further analyzed and demonstrated in different tables according to their root words and suffixed forms.

4. FINDINGS

In table 1, 'Malta, 'Burma, and 'China, the three root words, bear primary stress on first syllable. All these three roots, Malta, Burma, and China were stressed accurately by sixteen subjects on first syllable. The dominant stress patterns of bi-syllabic root words produced by the subjects were the same.

Table 1

Correct stress pattern	Number of productions by the subjects in Bi-syllabic root words				Number of total participants
	First syllable stress	Number of productions	Second syllable stress	Number of productions	
'Malta	'Malta	16	Mal'ta	0	16
'Burma	'Burma	16	Bur'ma	0	16
'China	'China	16	Chi'na	0	16

In table 2, All these 7 bi-syllabic suffixed words, Mal'tese, Bur'mese, Chi'nese, together with, ar'cade, blo'ckade, sto'ckade, and cru'sade carry second syllable strong stress. Equally, the major stress pattern of these seven bi-syllabic stems, produced by the subjects, Maltese, Burmese, Chinese, arcade, blockade, stockade, and crusade, is on the first syllable, which is an incorrect production. Among these productions in these bi-syllabic suffixed words, only ten accurate stresses were placed on the second syllable in Maltese, Burmese, blockade, and crusade.

The first-syllable stress pattern demonstrates that Pashto speaking students of English Language, learners habitually stress the first syllable instead of the second syllable in bi-syllabic roots and stems without noticing the stress-shifting suffixes.

Table 2

Correct stress pattern	Number of productions by the subjects in Bi-syllabic, ese and ade suffixes attached to the root words				Number of total participants
	First syllable stress	Number of productions	Second syllable stress	Number of productions	
Ma'ltese	'Maltese	14	Mal'tese	2	16
Bur'mese	'Burmese	14	Bur'mese	2	16
Chi'nese	'Chinese	16	Chi'nese	0	16
Ar'cade	'Arcade	16	Ar'cade	0	16
Blo'ckade	'Blockade	14	Blo'ckade	2	16
Sto'ckade	'Stockade	16	Sto'ckade	0	16
Cru'sade	'Crusade	12	Cru'sade	4	16

In table 3, 'Nepal, 'Journal, 'Novel and 'Sudan' the root words, bear primary stress on first syllable. Among these 64 productions by the subjects, incorrect stresses used on second syllable were, six on Nepal and ten on Sudan. In general, the participants mainly stressed first syllables in these bi-syllabic root words.

Table 3

Correct stress pattern	Number of productions by the subjects in Bi-syllabic root words				Number of total participants
	First syllable stress	Number of productions	Second syllable stress	Number of productions	
'Nepal	'Nepal	16	Ne'pal	0	16
'Journal	'Journal	16	Jour'nal	0	16
'Novel	'Novel	16	No'vel	0	16
'Sudan	'Sudan	6	Su'dan	10	16

Demonstrated in table 4, Suffixes, *ese*, shift primary stress to the third or last syllable of the word. Among 64 productions by the subjects, the correct stress placed on last syllable in these suffixed words were Four on Nepalese, while six on journalese, four on Novelese and four on Sudanese. Eighteen primary stresses were placed correctly by the subjects on third syllable out of 64 productions. Many production by the subjects observed, they placed primary word stress on first or second syllables in tri-syllabic stems.

Table 4

Correct stress pattern	Number of productions by the subjects in Tri-syllabic, <i>ese</i> suffixed words						Number of total participants
	First syllable stress	Number of productions	Second syllable stress	Number of productions	Third syllable stress	Number of productions	
Nepa'lese	'Nepalese	8	Ne'palese	4	Nepa'lese	4	16
Journa'lese	'Journalese	10	Jour'nalese	0	Journa'lese	6	16
Nove'lese	'Novelese	12	No'velese	0	Nove'lese	4	16
Suda'nese	'Sudanese	0	Su'danese	12	Suda'nese	4	16

In table 5, 'Glory, 'Fury and 'Vary are root words, they carry primary stress on first syllable. Primary stress of these roots were placed accurately by fourteen subjects and subject eight and sixteen are the two subjects, who placed the primary stress on second syllable in *fury*, which was incorrect production.

Table 5

Correct stress pattern	Number of productions by the subjects in Bi-syllabic root words				Number of total participants
	First syllable stress	Number of productions	Second syllable stress	Number of productions	
'Glory	'Glory	16	Glo'ry	0	16
'Fury	'Fury	14	Fu'ry	2	16
'Vary	'Vary	16	Va'ry	0	16

All these four stems in table 6, with the suffix, *ious* carry primary stress on first syllable. 'glorious, 'furious, 'various, and 'curious. All these primary stress were placed

accurately by the subjects in the tri-syllabic stems of ,ious suffixes. The first-syllable stress is the major stress pattern of the stems produced by the subjects.

Table 6

Correct stress pattern	Number of productions by the subjects in Tri-syllabic, ious suffixed words				Number of total participants
	First syllable stress	Number of productions	Second syllable stress	Number of productions	
'Glorious	'Glorious	16	Glo'rious	0	16
'Furious	'Furious	16	Fu'rious	0	16
'Various	'Various	16	Va'rious	0	16
'Curious	'Curious	16	Cu'rious	0	16

All these four root words in table 7; they are 'frequent, private, secret and 'prophet, bear strong stress on first syllable. Out of these 64 productions by the subjects, primary stress of the roots were placed accurately on 62 productions, but subject eight and nine were the only subjects, who placed the stress on second syllable in prophet, which was incorrect production.

Table 7

Correct stress pattern	Number of productions by the subjects in Bi-syllabic root words				Number of total participants
	First syllable stress	Number of productions	Second syllable stress	Number of productions	
'Frequent	'Frequent	16	Fre'quent	0	16
'Private	'Private	16	Pri'vate	0	16
'Secret	'Secret	16	Sec'ret	0	16
'Prophet	'Prophet	14	Pro'phet	2	16

In table 8, 'frequency, 'privacy, 'secrecy and 'prophecy, the tri-syllabic suffixed words, they carry primary stress on first syllable. Only seven incorrect stress placements, out of 64 productions, were produced on second syllable in secrecy and prophecy, while the remaining primary stress were placed accurately in the rest of the tri-syllabic suffixed words, the first-syllable stress is the major stress pattern of these suffixed words.

Table 8

Correct stress pattern	Number of productions by the subjects in Tri-syllabic, cy suffixed words				Number of total participants
	First syllable stress	Number of productions	Second syllable stress	Number of productions	
'Frequency	'Frequency	16	Fre'quency	0	16
'Privacy	'Privacy	16	Pri'vacy	0	16
'Secrecy	'Secrecy	14	Sec'recy	2	16
'Prophecy	'Prophecy	11	Pro'phecy	5	16

In table 9, 'Torrent, 'province, 'commerce, and 'finance, carry primary stress on first syllable in these English root words. The result demonstrates that sixteen productions, out of 64 were incorrectly placed on second syllable by the subjects. This situation is due to plenty of primary stress were placed incorrectly on second syllable in commerce, province and finance, which used to bear first-syllable stress indeed.

Table 9

Correct stress pattern	Number of productions by the subjects in Bi-syllabic root words				Number of total participants
	First syllable stress	Number of productions	Second syllable stress	Number of productions	
'Torrent	'Torrent	16	Tor'rent	0	16
'Province	'Province	14	Pro'vince	2	16
'Commerce	'Commerce	4	'Com'merce	12	16
'Finance	'Finance	14	'Fin'ance	2	16

In table 10, To'rrential, pro'vincial, co'mmercial, and fi'nancial, are tri-syllabic suffixed words, carry primary stress on second syllable. They are also called, stress-shifting suffixes cial/tial have an effect on moving word stress to the second-from-first syllable, that is the second syllable in tri-syllabic stems. There were only six incorrect productions, out of 64, being formed, because six participants placed strong stress on first syllable in word provincial, instead of placing the correct stress on second syllable. Apart from these incorrect stress placements, the participants have no difficulty in producing second-syllable stress accurately in other tri-syllabic stems.

The productions of participants clearly demonstrated that there is a change of the dominant stress pattern from the first-syllable stress in the bi-syllabic roots to the second-syllable stress in the tri-syllabic stems. Both dominant patterns of primary stress correctly produced by the subjects in roots and stems indicate that Pashto speaking students are more sensitive to the shift of strong stress in suffixes, cial or tial.

Table 10

Correct stress pattern	Number of productions by the subjects in tri-syllabic stems of cial/tial suffixed words				Number of total participants
	First syllable stress	Number of productions	Second syllable stress	Number of productions	
To'rrential	'Torrential	0	To'rrential	16	16
Pro'vincial	'Provincial	6	Pro'vincial	10	16
Com'mercial	'Commercial	0	Com'mercial	16	16
Fi'nancial	'Financial	0	Fi'nancial	16	16

Organ, Magnet, Symbol and Hygiene in table 11, are root words, they carry primary stress on first syllable. All subjects encountered difficulties in producing 'hygiene. 16 incorrect productions were produced by the subjects, while other productions were correct. Out of 64 productions, sixteen participants uttered hy'giene. They placed strong stress on second syllable in word hygiene. Although one-fourth of the stress placements are incorrect,

the first-syllable stress is still the major stress pattern in the bi-syllabic roots. However, incorrect stress placements in roots are unexpectedly more than other root words produced.

Table 11

Correct stress pattern	Number of productions by the subjects in Bi-syllabic root words				Number of total participants
	First syllable stress	Number of productions	Second syllable stress	Number of productions	
'Organ	'Organ	16	Or'gan	0	16
'Magnet	'Magnet	16	Mag'net	0	16
'Symbol	'Symbol	16	Sym'bol	0	16
'Hygiene	'Hygiene	0	Hy'giene	16	16

In table 12, Or'ganic, mag'netic, sym'bolic, and hy'gienic are tri-syllabic suffixed words, carry primary stress on second syllable. Ic, suffixed are called stress-shifting suffixes and they have an effect on moving word stress to the second syllable from first syllable, that is the second syllable in tri-syllabic stems that is stressed, when attach to the root word. The participants naturally produced the second-syllable stress, thus the main stress pattern of the stems is the second-syllable stress. There are only two incorrect productions, out of 64, being formed, two participants in all produced hygienic, they placed stress on first syllable, instead of placing the correct stress on second syllable. Apart from these incorrect stress placements, the participants have no difficulty in producing second-syllable stress accurately in other tri-syllabic stems.

Table 12

Correct stress pattern	Number of productions by the subjects in Tri-syllabic stems of ic, suffixed words				Number of total participants
	First syllable stress	Number of productions	Second syllable stress	Number of productions	
Or'ganic	'Organic	0	Or'ganic	16	16
Mag'netic	'Magnetic	0	Mag'netic	16	16
Sym'bolic	'Symbolic	0	Sym'bolic	16	16
Hy'gienic	'Hygienic	2	Hy'gienic	14	16

'Lemon, 'Cannon, Se'rene and 'Colon in table 13, are bisyllabic root words. 'lemon, 'cannon, and 'colon, carry first syllable strong stress, while root word se'rene carry second syllable strong stress.

The first-syllable stress by the participants, is the dominant stress pattern produced. Even though serene carry second-syllable stress, the subjects were not sure which is the correct syllable to be stressed.

Out of 64 productions by the subject, only twelve incorrect stress placements were produced by the participants. Four incorrect stress placement on colon, and eight on serene, while the rest of the production were correctly produced. First-syllable stress pattern produced by the participants is still dominant in bi-syllabic roots.

Table 13

Correct stress pattern	Number of productions by the subjects in Bi-syllabic root words				Number of total participants
	First syllable stress	Number of productions	Second syllable stress	Number of productions	
'Lemon	'Lemon	16	Le'mon	0	16
'Cannon	'Cannon	16	Can'non	0	16
Se'rene	'Serene	8	Se'rene	8	16
'Colon	'Colon	12	Co'lon	4	16

In table 14, lemona'de, canna'de, serena'de, and colonna'de, are tri-syllabic suffixed words, carry last-syllable stress.

Since the participants' dominant stress pattern is on the first or second syllable in tri-syllabic stem words, these stress patterns also happened in, ese and ade carry the same problem in tri-syllabic stems, While the correct stress pattern is third syllable stress.

Out of 64 productions by the subjects, 62 productions were incorrectly produced, only two productions were correct, where the subjects placed primary stress on final or third syllable of the stem word.

In this study, more than half of the strong stresses were placed on first syllable, while one fourth of the stress placements were used on second syllable. However, only one eighth of the stress placements were correctly placed on third syllable. Thus, the first-syllable stress is the most dominant stress pattern and the second-syllable stress becomes the second dominant in these stem words.

Regardless the incorrect productions, the participants have a tendency to produce first syllable or second syllable stress in these tri-syllabic stem words in general. That is why when the stems consist of stress-shifting stress on first or second syllable; more correct stress placements were generated. However, the subjects hardly used the strong stress on final syllable in the stems with the suffix, ese or ade, which causes plenty of inaccurate stress placements. The result reveal that Pashto speaking English students come across difficulties in identifying primary stress on final syllable which is seldom recognized by the subjects.

Table 14

Correct stress pattern	Number of productions by the subjects in Tri-syllabic stems of, ade suffixed words						Number of total participants
	First syllable stress	Number of productions	Second syllable stress	Number of productions	Third syllable stress	Number of productions	
Lemon'ade	'Lemonade	14	Le'monade	2	Lemon'ade	0	16
Cannon'ade	'Cannonade	14	Can'nonade	2	Cannon'ade	0	16
Seren'ade	'Serenade	6	Se'renade	8	Seren'ade	2	16
Colonn'ade	'Colonnade	12	Co'lonnade	4	Colonn'ade	0	16

5. Analysis of Primary word stress

5.1 Bi-syllabic Stems and their Root words

'Malta, 'Burma, and 'China, the root words, bearing primary stress on first syllable. Their stems, Mal'tese, Bur'mese, Chi'nese, together with, ar'cade, blo'ckade, sto'ckade, and cru'sade carry second syllable stress. The dominant stress patterns of bi-syllabic roots and stems produced by the subjects were the same.

The three roots, Malta, Burma, and China were all stressed accurately by sixteen participants on first syllable. Equally, the major stress pattern of seven bi-syllabic stems, Maltese, Burmese, Chinese, arcade, blockade, stockade, and crusade, is on the first syllable, which is an incorrect production. Among the 112 productions in the bi-syllabic stems, only ten accurate stresses were placed on the second syllable in Maltese, Burmese, blockade, and crusade.

The first-syllable stress pattern in these words, demonstrates that Pashto speaking students of English Language, habitually stress the first syllable instead of the second syllable in bi-syllabic roots and stems without noticing the stress-shifting suffixes.

5.2 Tri-syllabic Stems and their Root words

In general, the subjects mainly stressed first syllables in bi-syllabic roots, but they tend to place word stress on first or second syllables in tri-syllabic stems. There were only eighteen subjects correctly placed third-syllable stress in suffixed words 'Nepalese', 'Journalese', 'Novelese' and 'Sudanese'.

5.3 Tri-syllabic Stems, with First-Syllable Stress and their root words

All the eight stems with the suffix, rious or, cy bear strong stress on first syllable. They were 'glorious, 'furious, 'various, 'curious, 'frequency, 'privacy, 'secrecy and 'prophecy. Except for the absence of root in curious, their roots, 'glory, 'fury, 'vary, 'frequent, 'private, 'secret and 'prophet, also carry first-syllable strong stress.

Only seven incorrect stress placements, out of 112 productions by the subjects, were produced on second syllable in secrecy and prophecy, while the remaining primary stress were placed accurately in the rest of the tri-syllabic stems, the first-syllable stress is the major stress pattern of these stems. The dominant stress pattern of these suffixed words are identical to their Bi-syllabic root words, that is first syllable stress, Out of 112 productions by the subjects, primary stress of the roots were placed accurately by 108 but only four subjects placed the stress on second syllable in fury and prophet incorrectly.

5.4 Tri-syllabic Stems, which carry second-syllable stress and their root words

To'rrential, pro'vincial, co'mmmercial, fi'nancial, or'ganic, mag'netic, sym'bolic, and hy'gienic are tri-syllabic stems, carry primary stress on second syllable, but their roots, they are, 'torrent, 'province, 'commerce, 'finance, 'organ, 'magnet, 'symbol, and 'hygiene, carry strong stress on first syllable.

These suffixes are called, stress-shifting suffixes, these two suffixes, cial/tial and ic have an effect on moving word stress to the second from first syllable, that is the second syllable carry stress in tri-syllabic stems. the participants naturally produced the second-syllable stress and thus the main stress pattern of the stems is the second-syllable stress. There are only eight incorrect productions, out of 112, being formed, because six subjects, placed primary stress on first syllable in words,

provincial and two hygienic instead of placing the correct stress on second syllable. Apart from these incorrect stress placements, the subjects have no difficulty in producing second-syllable stress accurately in other tri-syllabic stems.

Supposedly, the subjects should have been capable of placing the correct stress on first syllable in the root words. The result demonstrates that one-fourth of the productions, that is 16 out of 64 incorrect stress placements, of the roots of the suffix, *cial* or *tial* were wrong. This situation was due to plenty of primary stress were placed incorrectly on second syllable in *commerce*, *province* and *finance*, which bear first-syllable stress indeed. Also, sixteen subjects possibly encounter difficulties in producing 'hygiene, they placed primary stress on second syllable. Although one-fourth of the stress placements were incorrect, the first-syllable stress is still the major stress pattern in these bi-syllabic root words. However, incorrect stress placements in root words were unexpectedly more than those in the stems.

The productions of subjects clearly demonstrate that there is a change of the dominant stress pattern from the first-syllable stress in the bi-syllabic root word to the second-syllable stress in the tri-syllabic stems. Both dominant patterns of primary stress were correctly produced by the subjects in root words and stems. This indicates that Pashto speaking students are more sensitive to the shift of strong stress in suffixes, *cial* or *tial* and, *ic*.

5.5 Tri-syllabic Stems, which carry third-syllable stress and their root words

Eight stems, *Nepale'se*, *journale'se*, *novele'se*, *Sudane'se*, *lemona'de*, *cannona'de*, *serena'de*, and *colonna'de*, are trisyllabic words carrying last-syllable stress. Apart from the roots, 'journal, 'novel, 'lemon, 'cannon, and 'colon, carrying first-syllable stress, root words with second-syllable stress are included and they are *Ne'pal*, *Su'dan*, and *se'rene*.

Since the participants' dominant stress pattern is on the first or second syllable in these tri-syllabic stems, these suffixes, *ese* and *ade* are tri-syllabic stems, which carry primary stress on third syllable.

In the study, out of 112 productions in these suffixed words, more than half of the stress were placed on first syllable that is, 76 strong stress were placed on first syllable, while one-fourth of the stress placements that is, 32 strong stress were placed on second syllable. However, only one-seventh of the stress placements that is, 20 strong stress were correctly placed on third syllable. The first-syllable stress in these suffixed words, is the most dominant stress pattern and the second-syllable stress in these words, becomes the second dominant stress pattern. For the root words, the first-syllable stress is the dominant in stress placements, because, 100 of the strong stress were placed on first syllable. Only one-sixth of the stress placements that is, 28 were accurately placed on second syllable out of total 112 productions. Even *serene* carry second-syllable stress, the subjects were not sure which is the correct syllable to be stressed.

Therefore, it is revealed by the result, that primary stress were mostly placed on first or second syllable, but these were inaccurate stress placement in the tri-syllable stems, which carry last syllable stress, and the first-syllable stress pattern produced by subjects is still dominant in bi-syllabic root words.

Regardless of the incorrect productions, the participants have a tendency to produce first-syllable or second- syllable stress in tri-syllabic suffixed words in general. That is, when the suffixed words, consist of stress-shifting class suffixes,

stress on first or second syllable, more correct stress placements are generated. However, the subjects would hardly put the strong stress on final syllable in the stems with the suffix, *ese* or *ade*, which caused plenty of inaccurate stress placements. The result suggests that Pashto speaking students come across difficulties in identifying primary stress on final syllable, which was seldom recognized by the subjects.

5.6 Effect of Suffixes on primary Stress Placements

Apart from investigating the effect on subjects' stress placements in stems by the above suffixes, The subjects performed the worst in, *ade* and, *ese*, suffixed words and the best in *cial/tial* and, *ic* suffixed words, as the data show that the number of correct productions vary greatly among different kinds of suffixes.

5.6.1 Suffixed words, with the suffixes, *ade* or, *ese*

Among the various kinds of suffixes, these, *ade* or, *ese* suffixes, which shift word stress to the last syllable are most frequently produced incorrectly by the subjects. There are only 28 correct stress placements out of 240 productions in total. 196 incorrect stress placements were produced, on first syllables and 16 incorrect stresses were used on second syllables in, *ese* and, *ade* suffixed words.

The most common stress pattern employed by the subjects in the root words, *Malta*, *Burma*, and *China*, is on the first syllable which is also the most dominant stress pattern in *Nepal*, *journal*, *novel*, and *Sudan*. Therefore, the subjects also kept on placing stress on first syllables in most of the, *ese* suffixed words. Although the suffix, *ese* is attached to the above root words. In this way the subjects probably do not have awareness about shifting word stress to the last-syllable positions. Although the incorrect first-syllable stress pattern is dominant in, *ese* suffixed words.

Same is the case of first-syllable stress in these root words, first syllable stress is the dominant stress pattern in them, in *lemon*, *cannon*, *Serene* and *colon*, in which *serene* bears a second-syllable stress. Accordingly, the subjects produced a similar stress pattern as in the, *ese* suffixed words. However, the number of incorrect productions of, *ade* suffixed words, which receive 120 inaccurate stress placements out of 128 productions, in the suffixed words attached to the root words, is slightly higher than that of the, *ese*-suffixed words, which have 90 inaccurate stress placements out of 112 productions.

Meanwhile participants persisted placing stress on first syllables in the stems, which have got suffixes shifting stress to last syllable, it is obvious that suffixes, *ese* and, *ade* do not have much effect on the stress pattern produced by the subjects, hence the subjects performed the worst in this group of suffixes. The lack of awareness of moving word stress to last syllables may be due to the low frequency of, *ese* and, *ade* suffixed words in the English corpus as these two suffixes are borrowed from French, a language which has a tendency towards last-syllable stress pattern.

If Pashto speaking students, rarely encounter these kinds of suffixes, they would probably choose to stress on the syllable that is stressed in their root words. That is why suffixes, *ese* and, *ade* do not have much influence on subjects stress placements and therefore caused plenty of inaccurate productions.

5.6.2 Stems with the suffix, cy

Cy suffixes are called, stress-neutral, that means primary stress do not shift to other syllable. The number of incorrect productions by the subjects of this stress-neutral suffixes is far lower than that of the last-syllable stress-shifting suffixes, but the incorrect stress in suffixed words (7 out of 64 productions) occupy, little of the total productions in this group. Compared to their root words, which have fewer syllables, the number of incorrect production of their root words were (2 out of 64 productions).

Similarly it happens in, cy suffixed words, as it is more likely for subjects to shift the word stress when pronouncing a words of more syllables. In root words, only two subjects placed the second-syllable stress on word prophet, while all the remaining productions were accurately produced by the subjects stressing the first-syllable positions. The first-syllable stress pattern in root words, still seems in the tri-syllabic, cy suffixed words, only seven subjects made mistakes, while they stressed second syllables in words, Secrecy and prophecy.

The above analysis of this study demonstrates that English neutral-stress suffixes, cy have a greater consequence on influencing the subjects' productions of the suffixed words, than those last-syllable stress-shifting suffixes, ese and, ade. the number of incorrect stress placements is still far lower than, ese and ade suffixed words. Among these types of suffixes, the French suffixes, ese and, ade are not familiar to the subjects and supposedly Pashto speaking students, who possibly do not have the awareness of shifting stress to last syllables and thus more incorrect stress placements were produced.

5.6.3 Stems with the suffixes, rious

Suffixes, rious have got the effect of shifting the word stress to antepenultimate (third-from-the-last) syllables. It is evident, that the number of correct productions highly increases compared to the productions of the previous stems by the subjects with suffixes, ese, ade, and cy, there were 205 incorrect stress placements out of 304 total productions in these group of suffixed words.

The productions of the root words of these suffixes that is, rious, are first-syllable stress was the dominant stress pattern in these root words. These root words are, glory, fury, vary, labor, injury, victory, and luxury and there was only two incorrect stress placement produced on the second syllable in root word fury. As a result, it was expected that subjects would use the strong stress in the first syllables in the, rious suffixed words in their tri-syllabic stems.

Although primary word stress move to the antepenultimate, that is third-from-the-last syllables of these, rious suffixed words. The data demonstrated that the subjects have no difficulty in placing the strong stress in the correct syllables in tri-syllabic suffixed words.

Likewise, the influence of the suffixes, rious on subjects' productions was similar, ever since the subjects shift the appropriate word stress in these suffixed words. It means that participants' productions were not easily influenced by the root words, which bear the dominant first-syllable stress pattern. Therefore the influence of these suffixes, rious on the stress placements was different from previous suffixes, they were, ade, ese, and cy.

5.6.4 Suffixed words, with suffixes, cial/tial and ic

These final group of suffixed words are stems which bear these suffix, cial/tial and ic . They have got the effect of shifting word stress to the penultimate, that is, second-from-the-last syllables in suffixed words. This class of suffixed words receives the highest number of correct stress productions, among all the groups of suffixed words. There were only 8 inaccurate stress placements out of total 128 productions. Although in this group of suffixes, the number of correct stress productions was the highest in, cial/tial and ic suffixed words.

Furthermore the major stress pattern in these words of organ, magnet, symbol, is on the first-syllable stress, but all 16 subjects placed the stress on second syllables in word hygiene. That is because, major incorrect stress productions were produced in this root word hygiene, while the remaining correct stress placements of the root words on first syllables produced by the subjects were the dominant stress pattern in English languages.

6. Conclusion

The purpose of this research study was to demonstrate the pattern of primary stress produced by Pashto speaking students in bi-syllabic and tri-syllabic stems and roots. It also examined the effect of suffixation on learners' primary stress placement and the amount of accurate and inaccurate stress placement produced by them.

Irrespective of the correctness of subjects production, the pattern of primary stress in bi-syllabic suffixed words was on the first syllable, on the other hand the primary stress pattern slightly changes in tri-syllabic suffixed words in which more strong stress placement were placed on second syllable and however first-syllable stress was still the dominant pattern. It is interesting to ascertain that the dominant pattern of strong stress continue to shift to the right, when the number of syllables increases in a word. In short, all the bi-syllabic and tri-syllabic root words share the same dominant stress pattern of primary stress which is on the first-syllable.

The above analysis advocates that the four types of suffixes in English language assert different degrees of effect on subjects stress placement, which can influence the amount of correct productions by the subjects. Actually, suffixes, ese and ade suffixes have the least effect on subjects stress placement, so the subjects did not place the primary stress on the first syllable in the suffixed words, as they carried out in root words. As the dominant stress pattern of primary stress produced by the subjects were incorrect, the subjects stress placement on the first syllable represents a large number of inaccuracy. Contrary to these suffixes, ese and ade, suffixes cial/tial and ic state a great effect on subjects primary stress placement ,because the subjects were capable of generating the shift in primary stress in penultimate syllable. Unlike the greater number of incorrect productions in, ese and ade suffixed words, the subjects were sensitive to the change of stress pattern, which assists a great number of correct productions in, cial/tial and ic suffixed words.

This research study does not only assist us to understand the primary stress patterns of root words and their suffixed words, produced by Pashto speaking students, but also demonstrates the effect of suffixation on students' strong stress placements. The awareness of word stress should be aroused so that Pashto speaking students can mend their own deficiency in primary stress placement and henceforth improvement can be made. Also, Khyber Pakhtunkhwa English teachers can also recognize that students encounter difficulty in stressing the correct syllable, therefore they can implement a better teaching way in teaching English word stress instead of only concentrating on the articulation of vowels and

consonants. The present study also contribute to further investigation of English word stress and its relationship with suffixation.

References

- Aitchison, J. (1994). Understanding words. In G. Brown, K. Malmkjor, A. Pollitt, & J. Williams (Eds.). *Language and understanding* (pp.81-96). New York: Oxford University Press.
- Archibald, J. (1998). Second language phonology, phonetics and typology. *Studies in Second Language Acquisition*, 20, 198-211.
- Burzio, L. (1994). *Principles of English stress*. New York: Cambridge University Press.
- Field, J. (2005). Intelligibility and the listener: The role of lexical stress. *TESOL Quarterly*, 39(3), 399-423.
- Fudge, E. (1984). *English word-stress*. London: Allen & Unwin.
- Giegerich, H. J. (1992). *English phonology: An introduction*. New York: Cambridge University Press.
- Gimson, A. C. (1967). *An introduction to the pronunciation of English*. London: Edward Arnold Ltd.
- Goës, A. N. (1974). *The stress system of English*. Stockholm: K.L. Beckmans Tryckeri.
- Guion, S. G., Harada, T., & Clark, J. J. (2004). Early and late Spanish-English bilinguals' acquisition of English word stress patterns. *Bilingualism Language and Cognition*, 7, 207-226.
- Hajkr, P. (2000). *Comparative analysis of Czech and English pronunciation: Pronunciation mistakes of Czech speakers*. Masaryk University Brno, CZ.
- Hill, L. A. (1965). *Stress and intonation. Step by step*. London: Oxford University Press.
- Kingdon, R. (1958). *The groundwork of English stress*. London: Longmans, Green and Co. Ltd.
- Krčmová, M. (2007). Fonetika. Retrieved from <http://is.muni.cz/elportal/estud/ff/js07/ fonetika/materialy/index.html>
- Nováková, P. (2007). *Stress and Rhythm in English and Czech*. Masaryk University Brno, CZ.
- Nguyen, T. T. A., & Ingram, J. (2005). Vietnamese Acquisition of English Word Stress. *TESOL Quarterly*, 39(2), 309-320.
- Plavka, R. (2003). *Aspects of English pronunciation*. Havlíčkův Brod, CZ: Fragment.
- Poldauf, I. (Ed.) (1984). *English word stress: A theory of word-stress patterns in English*. Oxford: Pergamon.
- Roach, P. (1998). *English phonetics and phonology*. New York: Cambridge University Press
- Skaličková, A. (1974). *Srovnávací fonetika angličtiny a češtiny*. Praha, CZ: Academia.
- Slowiaczek, L. (1990). Effects of lexical stress in auditory word recognition. *Language & Speech*, 33(1), 47-68.
- Tibbitts, E. L. (1967). *English Stress Patterns*. Cambridge, UK: W. Heffer & Sons.
- Tomková, K. (2008). Perception of Non-Native Pronunciation of English by Native Speakers. (Doctoral dissertation). Masaryk University Brno, CZ.
- Tremblay, A. (2008). Prosodic constraints in the acquisition of English primary stress by French Canadian L2 learners. Proceedings of the 2007 Second Language Research Forum, ed. Melissa Bowles et al., 158-170. Somerville, MA: Cascadilla Proceedings Project.
- Underhill, A. (1994). *Sound foundations*. Oxford: Heinemann Ltd.
- Wells, J.C (1971). *Practical phonetics*. London: Pitman Publishing.

Appendix A

Primary stress pattern in Bi-syllabic root words			
	'Malta	'Burma	'China
Participant 1	'Malta	'Burma	'China
Participant 2	'Malta	'Burma	'China
Participant 3	'Malta	'Burma	'China
Participant 4	'Malta	'Burma	'China
Participant 5	'Malta	'Burma	'China
Participant 6	'Malta	'Burma	'China
Participant 7	'Malta	'Burma	'China
Participant 8	'Malta	'Burma	'China
Participant 9	'Malta	'Burma	'China
Participant 10	'Malta	'Burma	'China
Participant 11	'Malta	'Burma	'China
Participant 12	'Malta	'Burma	'China
Participant 13	'Malta	'Burma	'China
Participant 14	'Malta	'Burma	'China
Participant 15	'Malta	'Burma	'China
Participant 16	'Malta	'Burma	'China

English primary stress pattern in Bi-syllabic root words				
	'Nepal	'Journal	'Novel	'Sudan
Participant 1	'Nepal	'Journal	'Novel	'Sudan
Participant 2	Ne'pal	'Journal	'Novel	Su'dan
Participant 3	'Nepal	'Journal	'Novel	'Sudan
Participant 4	'Nepal	'Journal	'Novel	Su'dan
Participant 5	Ne'pal	'Journal	'Novel	Su'dan
Participant 6	'Nepal	'Journal	'Novel	Su'dan
Participant 7	'Nepal	'Journal	'Novel	'Sudan
Participant 8	Ne'pal	'Journal	'Novel	Su'dan
Participant 9	'Nepal	'Journal	'Novel	'Sudan
Participant 10	Ne'pal	'Journal	'Novel	Su'dan
Participant 11	'Nepal	'Journal	'Novel	Su'dan
Participant 12	'Nepal	'Journal	'Novel	'Sudan
Participant 13	Ne'pal	'Journal	'Novel	Su'dan
Participant 14	'Nepal	'Journal	'Novel	Su'dan
Participant 15	'Nepal	'Journal	'Novel	'Sudan
Participant 16	Ne'pal	'Journal	'Novel	Su'dan

Pattern of Primary stress in bi-syllabic root words			
	'Glory	'Fury	'Vary
Participant 1	'Glory	'Fury	'Vary
Participant 2	'Glory	'Fury	'Vary
Participant 3	'Glory	'Fury	'Vary
Participant 4	'Glory	'Fury	'Vary
Participant 5	'Glory	'Fury	'Vary
Participant 6	'Glory	'Fury	'Vary
Participant 7	'Glory	'Fury	'Vary
Participant 8	'Glory	Fu'ry	'Vary
Participant 9	'Glory	'Fury	'Vary
Participant 10	'Glory	'Fury	'Vary
Participant 11	'Glory	'Fury	'Vary
Participant 12	'Glory	'Fury	'Vary
Participant 13	'Glory	'Fury	'Vary
Participant 14	'Glory	'Fury	'Vary
Participant 15	'Glory	'Fury	'Vary
Participant 16	'Glory	Fu'ry	'Vary

English primary stress pattern in Bi-syllabic root words, carry first syllable stress				
	'Frequent	'Private	'Secret	'Prophet
Participant 1	'Frequent	'Private	'Secret	'Prophet
Participant 2	'Frequent	'Private	'Secret	'Prophet
Participant 3	'Frequent	'Private	'Secret	'Prophet
Participant 4	'Frequent	'Private	'Secret	'Prophet
Participant 5	'Frequent	'Private	'Secret	'Prophet
Participant 6	'Frequent	'Private	'Secret	'Prophet
Participant 7	'Frequent	'Private	'Secret	'Prophet
Participant 8	'Frequent	'Private	'Secret	Pro'phet
Participant 9	'Frequent	'Private	'Secret	Pro'phet
Participant 10	'Frequent	'Private	'Secret	'Prophet
Participant 11	'Frequent	'Private	'Secret	'Prophet
Participant 12	'Frequent	'Private	'Secret	'Prophet
Participant 13	'Frequent	'Private	'Secret	'Prophet
Participant 14	'Frequent	'Private	'Secret	'Prophet
Participant 15	'Frequent	'Private	'Secret	'Prophet
Participant 16	'Frequent	'Private	'Secret	'Prophet

English primary stress pattern in Bi-syllabic root words				
	'Torrent	'Province	'Commerce	'Finance
Participant 1	'Torrent	'Province	Co'mmerce	'Finance
Participant 2	'Torrent	'Province	'Commerce	'Finance
Participant 3	'Torrent	'Province	Co'mmerce	Fi'nance
Participant 4	'Torrent	'Province	Co'mmerce	'Finance
Participant 5	'Torrent	'Province	Co'mmerce	'Finance
Participant 6	'Torrent	Pro'vince	'Commerce	'Finance
Participant 7	'Torrent	'Province	Co'mmerce	'Finance
Participant 8	'Torrent	'Province	Co'mmerce	'Finance
Participant 9	'Torrent	'Province	Co'mmerce	'Finance
Participant 10	'Torrent	'Province	'Commerce	'Finance
Participant 11	'Torrent	'Province	Co'mmerce	Fi'nance
Participant 12	'Torrent	'Province	Co'mmerce	'Finance
Participant 13	'Torrent	'Province	Co'mmerce	'Finance
Participant 14	'Torrent	Pro'vince	'Commerce	'Finance
Participant 15	'Torrent	'Province	Co'mmerce	'Finance
Participant 16	'Torrent	'Province	Co'mmerce	'Finance

English primary stress pattern in Bi-syllabic root words				
	'Organ	'Magnet	'Symbol	'Hygiene
Participant 1	'Organ	'Magnet	'Symbol	Hy'giene
Participant 2	'Organ	'Magnet	'Symbol	Hy'giene
Participant 3	'Organ	'Magnet	'Symbol	Hy'giene
Participant 4	'Organ	'Magnet	'Symbol	Hygie'ne
Participant 5	'Organ	'Magnet	'Symbol	Hy'giene
Participant 6	'Organ	'Magnet	'Symbol	Hy'giene
Participant 7	'Organ	'Magnet	'Symbol	Hy'giene
Participant 8	'Organ	'Magnet	'Symbol	Hy'giene
Participant 9	'Organ	'Magnet	'Symbol	Hy'giene
Participant 10	'Organ	'Magnet	'Symbol	Hy'giene
Participant 11	'Organ	'Magnet	'Symbol	Hy'giene
Participant 12	'Organ	'Magnet	'Symbol	Hygie'ne
Participant 13	'Organ	'Magnet	'Symbol	Hy'giene
Participant 14	'Organ	'Magnet	'Symbol	Hy'giene
Participant 15	'Organ	'Magnet	'Symbol	Hy'giene
Participant 16	'Organ	'Magnet	'Symbol	Hy'giene

Stress Pattern in bi-syllabic root words, carry first and second syllable stress				
	'Lemon	'Cannon	Se'rene	'Colon
Participant 1	'Lemon	'Cannon	'Serene	'Colon
Participant 2	'Lemon	'Cannon	Se'rene	'Colon
Participant 3	'Lemon	'Cannon	Se'rene	'Colon
Participant 4	'Lemon	'Cannon	'Serene	Co'lon
Participant 5	'Lemon	'Cannon	Se'rene	'Colon
Participant 6	'Lemon	'Cannon	'Serene	'Colon
Participant 7	'Lemon	'Cannon	'Serene	'Colon
Participant 8	'Lemon	'Cannon	Se'rene	Co'lon
Participant 9	'Lemon	'Cannon	'Serene	'Colon
Participant 10	'Lemon	'Cannon	Se'rene	'Colon
Participant 11	'Lemon	'Cannon	Se'rene	'Colon
Participant 12	'Lemon	'Cannon	'Serene	Co'lon
Participant 13	'Lemon	'Cannon	Se'rene	'Colon
Participant 14	'Lemon	'Cannon	'Serene	'Colon
Participant 15	'Lemon	'Cannon	'Serene	'Colon
Participant 16	'Lemon	'Cannon	Se'rene	Co'lon

Appendix B

Pattern of English primary stress in Bi-syllabic, ese suffixed words			
	Ma'ltese	Bur'mese	Chi'nese
Participant 1	'Maltese	'Burmese	'Chinese
Participant 2	Mal'tese	Bur'mese	'Chinese
Participant 3	'Maltese	'Burmese	'Chinese
Participant 4	'Maltese	'Burmese	'Chinese
Participant 5	'Maltese	Bur'mese	'Chinese
Participant 6	Mal'tese	'Burmese	'Chinese
Participant 7	'Maltese	'Burmese	'Chinese
Participant 8	'Maltese	'Burmese	'Chinese
Participant 9	'Maltese	'Burmese	'Chinese
Participant 10	'Maltese	'Burmese	'Chinese
Participant 11	'Maltese	'Burmese	'Chinese
Participant 12	'Maltese	'Burmese	'Chinese
Participant 13	'Maltese	'Burmese	'Chinese
Participant 14	'Maltese	'Burmese	'Chinese
Participant 15	'Maltese	'Burmese	'Chinese
Participant 16	'Maltese	'Burmese	'Chinese

English primary stress pattern in Bi-syllabic, ade suffixed words				
	Ar'cade	Blo'ckade	Sto'ckade	Cru'sade
Participant 1	'Arcade	'Blockade	'Stockade	'Crusade
Participant 2	'Arcade	'Blockade	'Stockade	'Crusade
Participant 3	'Arcade	'Blockade	'Stockade	'Crusade
Participant 4	'Arcade	'Blockade	'Stockade	'Crusade
Participant 5	'Arcade	Blo'ckade	'Stockade	Cru'sade
Participant 6	'Arcade	'Blockade	'Stockade	'Crusade
Participant 7	'Arcade	'Blockade	'Stockade	'Crusade
Participant 8	'Arcade	'Blockade	'Stockade	'Crusade
Participant 9	'Arcade	'Blockade	'Stockade	Cru'sade
Participant 10	'Arcade	'Blockade	'Stockade	Cru'sade
Participant 11	'Arcade	'Blockade	'Stockade	'Crusade
Participant 12	'Arcade	'Blockade	'Stockade	'Crusade
Participant 13	'Arcade	Blo'ckade	'Stockade	Cru'sade
Participant 14	'Arcade	'Blockade	'Stockade	'Crusade
Participant 15	'Arcade	'Blockade	'Stockade	'Crusade
Participant 16	'Arcade	'Blockade	'Stockade	'Crusade

Stress Pattern in Tri-syllabic, ese suffixed words, carry third syllable stress				
	Nepa'lese	Journa'lese	Nove'lese	Suda'nese
Participant 1	'Nepalese	'Journalese	'Novelese	Su'danese
Participant 2	Nepa'lese	Journa'lese	Nove'lese	Su'danese
Participant 3	'Nepalese	'Journalese	'Novelese	Suda'nese
Participant 4	'Nepalese	'Journalese	'Novelese	Su'danese
Participant 5	Nepa'lese	Journa'lese	Nove'lese	Suda'nese
Participant 6	'Nepalese	Journa'lese	'Novelese	Su'danese
Participant 7	Ne'palese	'Journalese	'Novelese	Su'danese
Participant 8	Ne'palese	'Journalese	'Novelese	Su'danese
Participant 9	'Nepalese	'Journalese	'Novelese	Su'danese
Participant 10	Nepa'lese	Journa'lese	Nove'lese	Su'danese
Participant 11	'Nepalese	'Journalese	'Novelese	Suda'nese
Participant 12	'Nepalese	'Journalese	'Novelese	Su'danese
Participant 13	Nepa'lese	Journa'lese	Nove'lese	Suda'nese
Participant 14	'Nepalese	Journa'lese	'Novelese	Su'danese
Participant 15	Ne'palese	'Journalese	'Novelese	Su'danese
Participant 16	Ne'palese	'Journalese	'Novelese	Su'danese

Stress Pattern in Tri-syllabic, rious suffixed words, carry first syllable stress				
	'Glorious	'Furious	'Various	'Curious
Participant 1	'Glorious	'Furious	'Various	'Curious
Participant 2	'Glorious	'Furious	'Various	'Curious
Participant 3	'Glorious	'Furious	'Various	'Curious
Participant 4	'Glorious	'Furious	'Various	'Curious
Participant 5	'Glorious	'Furious	'Various	'Curious
Participant 6	'Glorious	'Furious	'Various	'Curious
Participant 7	'Glorious	'Furious	'Various	'Curious
Participant 8	'Glorious	'Furious	'Various	'Curious
Participant 9	'Glorious	'Furious	'Various	'Curious
Participant 10	'Glorious	'Furious	'Various	'Curious
Participant 11	'Glorious	'Furious	'Various	'Curious
Participant 12	'Glorious	'Furious	'Various	'Curious
Participant 13	'Glorious	'Furious	'Various	'Curious
Participant 14	'Glorious	'Furious	'Various	'Curious
Participant 15	'Glorious	'Furious	'Various	'Curious
Participant 16	'Glorious	'Furious	'Various	'Curious

Stress Pattern in Tri-syllabic, cy suffixed words, carry first syllable stress				
	'Frequency	'Privacy	'Secrecy	'Prophecy
Participant 1	'Frequency	'Privacy	'Secrecy	'Prophecy
Participant 2	'Frequency	'Privacy	'Secrecy	'Prophecy
Participant 3	'Frequency	'Privacy	'Secrecy	'Prophecy
Participant 4	'Frequency	'Privacy	'Secrecy	'Prophecy
Participant 5	'Frequency	'Privacy	'Secrecy	'Prophecy
Participant 6	'Frequency	'Privacy	'Secrecy	Pro'phecy
Participant 7	'Frequency	'Privacy	'Secrecy	Pro'phecy
Participant 8	'Frequency	'Privacy	Sec'recy	Pro'phecy
Participant 9	'Frequency	'Privacy	'Secrecy	'Prophecy
Participant 10	'Frequency	'Privacy	'Secrecy	'Prophecy
Participant 11	'Frequency	'Privacy	'Secrecy	'Prophecy
Participant 12	'Frequency	'Privacy	'Secrecy	'Prophecy
Participant 13	'Frequency	'Privacy	'Secrecy	'Prophecy
Participant 14	'Frequency	'Privacy	'Secrecy	Pro'phecy
Participant 15	'Frequency	'Privacy	'Secrecy	'Prophecy
Participant 16	'Frequency	'Privacy	Sec'recy	Pro'phecy

Stress Pattern in Tri-syllabic, cial/tial suffixed words, carry second syllable stress				
	To'rrential	Pro'vincial	Com'mercial	Fi'nancial
Participant 1	To'rrential	'Provincial	Com'mercial	Fi'nancial
Participant 2	To'rrential	Pro'vincial	Com'mercial	Fi'nancial
Participant 3	To'rrential	'Provincial	Com'mercial	Fi'nancial
Participant 4	To'rrential	'Provincial	Com'mercial	Fi'nancial
Participant 5	To'rrential	Pro'vincial	Com'mercial	Fi'nancial
Participant 6	To'rrential	Pro'vincial	Com'mercial	Fi'nancial
Participant 7	To'rrential	Pro'vincial	Com'mercial	Fi'nancial
Participant 8	To'rrential	Pro'vincial	Com'mercial	Fi'nancial
Participant 9	To'rrential	'Provincial	Com'mercial	Fi'nancial
Participant 10	To'rrential	Pro'vincial	Com'mercial	Fi'nancial
Participant 11	To'rrential	'Provincial	Com'mercial	Fi'nancial
Participant 12	To'rrential	'Provincial	Com'mercial	Fi'nancial
Participant 13	To'rrential	Pro'vincial	Com'mercial	Fi'nancial
Participant 14	To'rrential	Pro'vincial	Com'mercial	Fi'nancial
Participant 15	To'rrential	Pro'vincial	Com'mercial	Fi'nancial
Participant 16	To'rrential	Pro'vincial	Com'mercial	Fi'nancial

Stress Pattern in Tri-syllabic, ic suffixed words, carry second syllable stress				
	Or'ganic	Mag'netic	Sym'bolic	Hy'gienic
Participant 1	Or'ganic	Mag'netic	Sym'bolic	Hy'gienic
Participant 2	Or'ganic	Mag'netic	Sym'bolic	Hy'gienic
Participant 3	Or'ganic	Mag'netic	Sym'bolic	Hy'gienic
Participant 4	Or'ganic	Mag'netic	Sym'bolic	Hy'gienic
Participant 5	Or'ganic	Mag'netic	Sym'bolic	Hy'gienic
Participant 6	Or'ganic	Mag'netic	Sym'bolic	Hy'gienic
Participant 7	Or'ganic	Mag'netic	Sym'bolic	'Hygienic
Participant 8	Or'ganic	Mag'netic	Sym'bolic	Hy'gienic
Participant 9	Or'ganic	Mag'netic	Sym'bolic	Hy'gienic
Participant 10	Or'ganic	Mag'netic	Sym'bolic	Hy'gienic
Participant 11	Or'ganic	Mag'netic	Sym'bolic	Hy'gienic
Participant 12	Or'ganic	Mag'netic	Sym'bolic	Hy'gienic
Participant 13	Or'ganic	Mag'netic	Sym'bolic	Hy'gienic
Participant 14	Or'ganic	Mag'netic	Sym'bolic	Hy'gienic
Participant 15	Or'ganic	Mag'netic	Sym'bolic	'Hygienic
Participant 16	Or'ganic	Mag'netic	Sym'bolic	Hy'gienic

Stress Pattern in Tri-syllabic, ade suffixed words, carry third syllable stress				
	Lemon'ade	Cannon'ade	Seren'ade	Colonn'ade
Participant 1	'Lemonade	'Cannonade	'Serenade	'Colonnade
Participant 2	'Lemonade	'Cannonade	'Serenade	'Colonnade
Participant 3	'Lemonade	'Cannonade	Se'renade	'Colonnade
Participant 4	'Lemonade	'Cannonade	Se'renade	Co'lonnade
Participant 5	'Lemonade	'Cannonade	'Serenade	'Colonnade
Participant 6	'Lemonade	'Cannonade	Seren'ade	Co'lonn'ade
Participant 7	Le'monade	Can'nonade	Se'renade	Co'lonnade
Participant 8	'Lemonade	'Cannonade	Se'renade	'Colonnade
Participant 9	'Lemonade	'Cannonade	'Serenade	'Colonnade
Participant 10	'Lemonade	'Cannonade	'Serenade	'Colonnade
Participant 11	'Lemonade	'Cannonade	Se'renade	'Colonnade
Participant 12	'Lemonade	'Cannonade	Se'renade	Co'lonnade
Participant 13	'Lemonade	'Cannonade	'Serenade	'Colonnade
Participant 14	'Lemonade	'Cannonade	Seren'ade	'Colonnade
Participant 15	Le'monade	Can'nonade	Se'renade	Colonnade
Participant 16	'Lemonade	'Cannonade	Se'renade	'Colonnade

