THE WAY SOUTH VIETNAMESE PRONOUNCE ENGLISH

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DEDICATED TO VIETNAMESE LEARNERS OF ENGLISH
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gave their time to make recordings, attend classes and become central to this research study. They have helped me to fully understand the importance of teaching pronunciation to Vietnamese learners of English.

Petre Ann Santry
Summary

Chapter 1 describes the subjects and the investigation procedure including the recorded interviews and equipment used. It also outlines the ten pronunciation lessons that were given.

Chapter 2 is a short account of the phonemes of Australian English.

Chapter 3 is an account of the phonemes of Vietnamese, summarising and comparing the analyses of Nguyễn Dang Liem and Lê Ba Thao (later form: Thao Lê).

Chapter 4 compares Australian English and South Vietnamese, discussing the postulated correspondence of the phonemes and predicting errors arising from Li interference.

Chapter 5 is a detailed analysis of the English sounds spoken by the subjects, including descriptions of the results of the first and second tests. This chapter comprises detailed analysis of the vowels, diphthongs, consonants and consonant clusters pronounced by the subjects. The bulk of this chapter could have been contained in an appendix. A reader may choose to read only the first few pages and then go on to chapter 6.

Chapter 6 is a summary of the vowels, diphthongs and consonants analysed in chapter 5, but presented in a less detailed way, enabling easier access to the findings in chapter 5. This
Chapter is especially useful for those who want to concentrate on the main points.

Chapter 7 gives some practical ideas for teachers of English pronunciation to Vietnamese people.

Chapter 8 describes the statistical agreement tests. It includes the percentages of difficulties and improvements of the vowels, diphthongs and consonants calculated overall and in word position, and the difficulties of the individual students.

Chapter 9 gives a description of the approxilect spoken by South Vietnamese speakers of English. It includes a consideration of predictable and non-predictable error types and provides some details about first language interference.

Chapter 10 provides an acoustical analysis of the vowels of South Vietnamese.
It is hereby declared that the material contained in this thesis has not been presented for the award of any university, and that to the best of my knowledge the thesis contains no material written or published by another person except when due reference is made in the text.
# TABLE OF CONTENTS

Acknowledgements

Summary

Statement

Table of Contents

Map of Vietnam

## CHAPTER 1: INTRODUCTION

1.0 Introduction

1.1 Investigation

1.2 Equipment used for recording students

1.3 Interviews and questionnaire

1.4 Lessons given

## CHAPTER 2: PHONEMES OF AUSTRALIAN ENGLISH

2.0 Introduction

2.1 Vowel phonemes

2.2 Consonant phonemes

## CHAPTER 3: PHONEMES OF SOUTH VIETNAMESE

3.0 Introduction

3.1 Vowel phonemes

3.2 Distribution of vowels

3.3 Consonant phonemes

## CHAPTER 4: COMPARISON OF AUSTRALIAN ENGLISH AND SOUTH VIETNAMESE

4.0 Correspondences between L1 and L2
4.1 Possible interference of Vietnamese tones and shortened vowel sounds
4.2 Vowel phonemes
4.3 Postulated correspondence of vowels
4.4 Postulated correspondence of diphthongs
4.5 Postulated correspondence of consonants

CHAPTER 5: ENGLISH PRONOUNCED BY SOUTH VIETNAMESE
5.0 Introduction
5.1 Vowels
5.2 Diphthongs
5.3 Consonants
5.4 Consonant clusters

CHAPTER 6: SUMMARY OF ENGLISH PRONOUNCED BY SOUTH VIETNAMESE
6.0 Introduction
6.1 Vowels
6.2 Diphthongs
6.3 Consonants

CHAPTER 7: SUGGESTIONS FOR TEACHERS
7.0 Introduction
7.1 Planning what to teach
7.2 Some practical ideas for teaching
CHAPTER 8: PRONUNCIATION DIFFICULTIES AND IMPROVEMENTS

8.0 Introduction 257
8.1 Results of statistical analysis 257
8.2 Difficulties and improvements in vowels 259
8.3 Difficulties and improvements in consonants 262
8.4 Errors and improvements of subjects and their self-assessment. 268

CHAPTER 9: THE APPROXILECT

9.0 Introduction 270
9.1 Description of vowels in the approxilect 270
9.2 Description of consonants in the approxilect 272
9.3 Errors not able to be predicted 275
9.4 Summary of first language interference 276
9.5 Error classes in vowels and diphthongs 278
9.6 Error classes in consonants 278
9.7 Error patterns in consonant clusters 279
9.8 Conclusion 283

CHAPTER 10: ACOUSTICAL ANALYSIS OF CHECKED AND UNCHECKED VOWELS.

9.0 Introduction 284
9.1 Intensity 284
9.2 Frequency 285
9.3 Duration 286
9.4 Spectrum 286
9.5 Conclusion 291
CHAPTER 1

THE INVESTIGATION

1.0 Introduction
The main purpose of this study was to gain a practical understanding about the teaching of pronunciation to South Vietnamese speakers who use Australian English as a second language. This was done through a thorough investigation and detailed analysis comparing the pronunciation of both languages in order to help establish the nature of errors in the pronunciation of South Vietnamese people prior to, and following, a series of pronunciation lessons. This was done with two purposes in mind, one to find which sounds are most difficult to pronounce and what sounds are in fact used, and the other to see which errors are most readily corrected following instruction. A further analysis six months later was conducted to determine the longer term results.

Although empirical research of the 1970's began to show that the predictive power of contrastive analysis may be questionable (Odlin, 1989, p.17), causing it to almost fall into disuse, transfer affecting second language pronunciation has been less controversial (Odlin, 1989, p.23). In this paper, it has been of interest both to predict errors through analysis of the first language, and to establish the extent of their relationship to language transfer.
Although there was no analysis of prosodemes including intonation and stress, and less explicit teaching done in this particular area, students showed noticeable improvement. Other possible areas of investigation including a more detailed study of positive and negative transfer, differing periods of acquisition and the influences affecting language transfer such as language distance (see Odlin, 1989,p.32) or features of first and second language compared with features in creole, child languages and pidgin (as discussed by Kühlwein, 1984,p.80), were considered to be outside the scope of this study.

1.1 Investigation:

The investigation consisted of interviewing and recording ten South Vietnamese people of A.S.L.P.R. level 3 and above (tertiary level), who were interested in improving their pronunciation. They were then given ten one hour intensive pronunciation lessons which were followed by final recorded interviews and a short written questionnaire about their assessment of the classes.

The subject descriptions (fig.1) have been ordered according to an estimation of their total years of English instruction, which can only be approximate. It would also be impossible to know the quality of the programmes they attended in Vietnam and interim countries as well as in Australia. The subjects had been in Australia for from one to nine years and ranged from 24 to 36 years of age. Three had studied to tertiary
level in Vietnam, and two had achieved degree status in Australia. There was only one female represented in the group. These aspects did not seem to bear any relationship to their pronunciation abilities.

<table>
<thead>
<tr>
<th>Subject</th>
<th>Gender</th>
<th>Age</th>
<th>Eng.instr.</th>
<th>Aust.</th>
<th>Years of level V/N</th>
<th>Tertiary level Aust.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>male</td>
<td>25</td>
<td>2</td>
<td>1</td>
<td>2nd yr.</td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>male</td>
<td>27</td>
<td>2</td>
<td>4</td>
<td>______</td>
<td>3rd yr.</td>
</tr>
<tr>
<td>3.</td>
<td>male</td>
<td>27</td>
<td>2</td>
<td>9</td>
<td>______</td>
<td>3yr.degree</td>
</tr>
<tr>
<td>4.</td>
<td>male</td>
<td>32</td>
<td>3</td>
<td>6</td>
<td>3yr.degree</td>
<td>1st yr.</td>
</tr>
<tr>
<td>5.</td>
<td>male</td>
<td>25</td>
<td>3½</td>
<td>4</td>
<td>______</td>
<td>3rd yr.</td>
</tr>
<tr>
<td>6.</td>
<td>female</td>
<td>27</td>
<td>4</td>
<td>4</td>
<td>______</td>
<td>2nd yr.</td>
</tr>
<tr>
<td>7.</td>
<td>male</td>
<td>27</td>
<td>4</td>
<td>8</td>
<td>______</td>
<td>3yr.degree</td>
</tr>
<tr>
<td>8.</td>
<td>male</td>
<td>24</td>
<td>5</td>
<td>6</td>
<td>______</td>
<td>2nd yr.</td>
</tr>
<tr>
<td>9.</td>
<td>male</td>
<td>36</td>
<td>5½</td>
<td>7</td>
<td>3yr.degree</td>
<td>1st yr.</td>
</tr>
<tr>
<td>10.</td>
<td>male</td>
<td>26</td>
<td>6</td>
<td>3</td>
<td>______</td>
<td>2nd yr.</td>
</tr>
</tbody>
</table>

**FIGURE 1. Description of the subjects.**

The subjects were not chosen because they had received no prior instruction in pronunciation, but it was discovered that, even though they had all received many English classes, only subject 3 (see appendix A) had received just two pronunciation classes as part of a ten weeks advanced English course with the Council of Adult Education. This neglect of pronunciation instruction in English language classes is consistent with the findings of Del McNeil (1987, p.v) who
states "it would be reasonable to conclude that little attention is paid by most teachers .... to any of those aspects of instruction specific to the needs of Vietnamese". Given that these people have the highest pronunciation need of all language groups entering Australia, both in number of those entering Australia and in number of those with need (27% and 26% respectively, according to the Victorian A.M.E.S. information data), it seems extraordinary to find that earlier instruction in this area did not occur.

FIGURE 2. Comparative popularity of aspects of pronunciation instruction between teachers and students (McNeill, p. 59).
In the above survey involving comparative statements about the popularity of different aspects of pronunciation instruction, McNeil shows that there are statistically significant differences in opinion between teachers' and students' priorities concerning aspects of pronunciation instruction (see fig.2). In this survey, 80% of the Vietnamese students who were difficult to understand, and 31% of those who were easily understood, expressed their desire for special pronunciation classes. Teachers placed a greater emphasis on the importance of sentence stress and linking than did students, and students showed a greater emphasis on conversation, pronouncing the ends of words, copying words, practicing all the different sounds, pronunciation classes and practicing pronunciation at home. Equal emphasis was placed on the need for practice of intonation, listening, copying the ends of words and rhythm.

1.2 Equipment used for recording students

The recorder used was a small, portable "Panasonic Slim Line", enabling ease of transport and ease of recording the subjects in their homes. The microphone for the recordings was a "Realistic" super cardoid dynamic 33-99 2B model which rejects sounds from the back, as well as suppressing acoustic feedback. The frequency response is 80 to 15,000 Hz, more or less 'straight' between 200 and 1,500 Hz, with +4 dB at about 3,000 Hz, falling off at about 10,000 and giving -4 dB at about 15,000 Hz. This gave an accuracy of recording sufficient to enable a good auditory analysis, as well as the making of sonagrams.
1.3 Interviews and questionnaire

Both initial and final interviews contained an initial guided conversation, followed by carefully devised word lists designed to cover most combinations of English phonemes, finishing with a short reading passage. Each interview lasted from about fifteen to twenty minutes (these interview sheets can be seen in appendix B). Apart from being designed to cover as many phoneme combinations as possible, the word lists were arranged to give uniformity and rhythm when read, making it easier for the students, and more suitable for the making of sonagrams. These lists began with single vowels and consonants being read in random order, firstly checking that the subjects understood the meanings and pronunciation of lesser known words such as "bough" and "bow". Words that contained two of the phonemes being tested (such as bet /bet/) were not repeated, in order to save time.

Following this, the consonants and their clusters were presented in word initial, medial and final position. As can be seen in the word lists, all consonants can occur in word medial position. Those not normally occurring in initial position are /s/ and /m/, while those not occurring in final position are /h, r, j, w/. Most consonant clusters occur in word medial position but the majority do not occur in initial position. Almost 50% do not occur in word final position.

In the recording of the subjects, subject 7 was extremely tentative and nervous, believing he had a speech impediment.
The others ranged from a little nervous to quite confident, although all were aware that they were not as good as they would have liked, finding some of the words a bit strange. At times I prompted them, but this made little difference to their pronunciation. Words such as bath and bathe were difficult to differentiate and consonant clusters were a huge problem for them.

The final recorded interviews were much the same as the initial ones, but instead of "getting to know" the students and the way they perceived their language problems, the guided conversation involved discussing the way students felt the classes had benefited them. Some became very nervous and tense again. This was followed up by answering a brief questionnaire which asked the students to grade their pronunciation, the benefits obtained in the classes, and the amount of classes they saw as optimal.¹

1.4 Lessons given
Ten one-hour lessons were given to the students in small groups ranging from three to five at a time, depending on their time availability. Some of these classes were conducted at university, and some in the students' homes.

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¹. Copies of all the recordings are available upon request from the archives in the humanities department at Victoria University of Technology, Footscray.
Before the first lesson, I went through copies of the word lists and reading passage, listening to the students' recordings and colour coding their pronunciation. For example, a yellow marker indicated the phoneme articulation was too soft, a red marker indicated that the phoneme was omitted altogether and other kinds of mispronunciations were marked above with the phonetic symbol indicating the way the student had pronounced it. Where lack of word linking or inappropriate strength of articulation were creating problems, this was also indicated.

In the first lesson, I showed these to the students who responded very positively and in a rather excited way, as seeing the kind of things they were doing incorrectly in this way gave them some sort of idea about what was happening when they spoke English. For example, some were quite surprised to see the places they were not pronouncing sounds at all, and very interested to see that they were pronouncing certain sounds too softly. Following this, I was able to choose suitable lessons starting with simple sounds, later moving on to more complex consonant clusters and word linkings.

The texts used in these lessons were mainly from two excellent sources. The first one was English Pronunciation Illustrated by John Trim, which is delightfully illustrated by Peter Kneebone, concentrating on single sounds, and the second was Elements of Pronunciation by Peter Mortimer, which is accompanied with tapes. This one was very useful for more complex groups
of sounds as well as practise in word stress and linking.

I was able to cover most sounds and groups of sounds the students were previously having problems with, persevering with each person using diagrams, examples, pairwork, repetition and comparisons with their original language until all were able to demonstrate their ability to produce each sound more or less correctly. During these ten lessons, the students found that they were not only able to pronounce every kind of sound and cluster, but were able to be corrected far more easily than at first. This in itself was a huge leap forward for some of them, who had previously believed that it would be impossible for them to master this ability. Their main problem of course, was to retain this ability and then incorporate it into normal use. However, it was certainly encouraging for them to know that they now had a basis to work from, and that it was within their ability to slowly correct old habits. Some students claimed that people were understanding them more easily than before, which was very rewarding to hear.

The students' enthusiasm remained high throughout the course, although student number ten felt that his progress was impeded by the concern he felt for his seriously ill wife. Subject number six appeared to regress in the second test following a visit to his family in Vietnam, but the results of the third test did not seem to be affected. Subject number one was extremely shy and nervous, causing him to try too hard and
over-articulate his phonemes, but his progress was consistent
with the other students. All students, even subject number
nine who had relatively few errors at the beginning progressed
in their ability to pronounce phonemes correctly.

Those students with less pronunciation difficulties (such
as subject 3), were able to concentrate on stronger voicing,
intonation and word linking where necessary, meaning that
all were able to benefit in some way or another, according
to their perceived level of immediate need.
CHAPTER 2

PHONEMES OF AUSTRALIAN ENGLISH

2.0 Introduction

There is a considerable sociolectal variation in Australia, which has a continuum from high to low, according to Hammarstrom (1980, p.62). Pilch (1971, p.275) agrees with this, claiming there is a continuous scale of phonetic variation, from Educated Australian speech to the speech of people with lower and lower degrees of education and rank in the social hierarchy. Hammarstrom criticises Mitchell (1970,p.6) for establishing the widely accepted tripartite division of Cultivated (11%), General (55%) and Broad Australian (34%) pronunciation. I agree that there is no clear division between the sociolects, although for practical purposes it seems to be useful to refer to three sociolects.

As it will not be professionally appropriate for my subjects to use a broad sociolect and they will not often communicate with those who prefer to emulate a more educated Received Pronunciation (R.P), I consider it more suitable for them to approximate the "general" pronunciation.

2.1 Vowel Phonemes

Transcribing the vowels is more difficult than transcribing the consonants in English, because there are more sociolectal differences in the use of vowels than in the use of consonants.
Also, authors differ widely in their views of appropriate ways to transcribe the vowel phonemes, resulting in several possible approaches.

The approach I have chosen in the case of each vowel phoneme, is to choose the symbol that describes its main variant in Australian English. The transcriptions /i:/ and /u:/ versus /I/ and /u/ are redundant because it would be possible to write /i/ versus /I/ or /i:/ versus /i/ and /u/ versus /u/ or /u:/ versus /u/. The redundant transcriptions seem, however, to make the transcription somewhat clearer and the symbol /:/ is anyhow required for some of the other vowels. Thus, for transcription purposes, I have chosen /i:/ (as in beat) and /I/ (as in bit), whereas I could otherwise have chosen /i/ versus /I/ or /i:/ versus /i/. I have also chosen to use /u:/ (as in boot) and /u/ (as in put), whereas I could otherwise have chosen /u/ versus /u/ or /u:/ versus /u/.

/i:/ as in beat /bi:t/  /ɔ:/ as in pretend /prætend/.
/i/ as in bit /bɪt/  /ɜ:/ as in bird /bɜ:d/.
/e/ as in bet /bet/  /æ/ as in sofa /ˈsɑːvəf/.
/ɛ/ as in bat /bæt/  /ɔ/ as in pot /pɔt/.
/a:/ as in part /pɑːt/  /ɔ:/ as in port /pɔːt/.
/a/ as in but /bæt/  /ʊ/ as in put /pʊt/.
/u:/ as in boot /ˈbuːt/  /u/ as in boot /ˈbuːt/.

I shall discuss below only the vowels which I believe need
a comment.

/i:/

/i:/ (as in feed) is more diphthongised in Australian English (A.E.) than it is in R.P.

/ɪ/

/ɪ/ (as in hit) is often closer in A.E. than the /ɪ/ in R.P.

/e/

/e/ (as in net) has a closer sound than in R.P., as pointed out by Hammarstrom (1980, p.6). In words such as net, then or chess and /e/ is a more accurate transcription than the /ɛ/ used by Mitchell and Delbridge (see figure 1, below).

/ɛ/

/ɛ/ (as in hat) is closer than the R.P./æ/, for example /bɛt/, not /bæt/ as used by Mitchell and Delbridge (see figure 1, below).

Bernard (1963, p.346-352) and others have discussed the possibility of an "extra phoneme" /æː/ in the lengthening of the vowel in banner (someone who bans things) versus banner (a kind of flag) with the shorter /æ/. Hammarstrom (1980 p.8) points out that this longer vowel, which also appears in words such as man and bad should be /ɛː/ in A.E. pronunciation in preference to /æː/. 
/a/

/a/ (as in but) belongs to A.E. and R.P. The commonly used transcription /ʌ/ is not correct (Hammarstrom, 1980, p.11,13)

/aː/

/aː/ (as in car) is more accurate than /aː/ which belongs to R.P. (Hammarstrom, 1980, p.9).

/uː/

/uː/ (as in food) is more diphthongised in A.E. than it is in R.P. (Hammarstrom, 1980, p.11).

FIGURE 1. The Vowels of Australian English (according to Bernard and Delbridge, 1970, p.46)

In reference to figure 1, Hammarstrom (1980, p.13) emphasises that /ʌ/ not only is not applicable to A.E., but is also wrongly placed, since phonetic symbols cannot be moved from their designated positions in the quadrilateral. The /a/ seems to be the right symbol for the relevant sound, but should be moved somewhat to the left, and the /u/ should be moved to the right. The /ɛ/ should be changed to /e/ and the /æ/ to
/ε/ and moved up. The /b/ is wrong and should be replaced by /ɔ/. However, this /ɔ/ is somewhat more open than the /ɔː/ which is transcribed by /ɔ/ in figure 1.

2.2 Consonant Phonemes

When compared to the vowels, there is relatively little phonetic variability and little divergence from R.P. in A.E., meaning that there is correspondingly little need to account for any varying transcriptions.

<table>
<thead>
<tr>
<th></th>
<th>Bilabial or Labiodental</th>
<th>Dental</th>
<th>Alveolar or Post-alveolar</th>
<th>Palato-alveolar or Palatal</th>
<th>Velar</th>
<th>Glottal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plosive</td>
<td>p/b</td>
<td>t/d</td>
<td>k/g</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fricative</td>
<td>f/v</td>
<td>θ/ð</td>
<td>s/z</td>
<td>S/ʒ</td>
<td>h</td>
<td></td>
</tr>
<tr>
<td>Affricate</td>
<td></td>
<td></td>
<td></td>
<td>ts/dʒ</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Semi-vocoid</td>
<td>w</td>
<td></td>
<td></td>
<td>j</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nasal</td>
<td>m</td>
<td>n</td>
<td></td>
<td>η</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lateral</td>
<td></td>
<td>l</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Continuant</td>
<td></td>
<td></td>
<td></td>
<td>r</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

FIGURE 2. The Consonant Phonemes of Australian English.
Plosives and /n/

/t/, /d/ and /n/ are alveolar and not dental as in most other languages.

/t/ (as in tap) is a voiceless plosive and can be released in all positions. There is a flapped, voiced /t/ allophone (not /d/) in better, shouted, get out etc. which is common in lower A.E. sociolects.

The plosives in word final position, such as cap, dab, pat, pad and sack can be pronounced without an audible release, unless the following word is beginning with a phoneme which favours a plosive release, for instance a vowel, as in put a cap on. However, the released variant is the most common.

/r/

/r/ is "linking" or "intrusive" more frequently in A.E. than in R.P. In Australia, such expressions as law and order, drawing or the car almost crashed, have typically an /r/ after the first vowel. Hammarstrom (1980, p.23) calls the /r/ an "unstable phoneme" rather than being a linking or intrusive one. However, an attempt to establish which is the most appropriate term is unimportant for our practical purposes.
/l/

/l/ is more velarised than in most other languages, particularly in final position.
CHAPTER 3

PHONEMES OF SOUTH VIETNAMESE

3.0 Introduction

There are three distinct, main dialects in the Vietnamese language, the northern, central and southern. It is the South Vietnamese (S.V.) variety which was used in this study as the subjects were all born and educated in South Vietnam even though two of them claimed that they spoke closer to the national standard of the Northern Hanoi dialect which contains an extra tone as well as some minor pronunciation differences.

Vietnamese is a monosyllabic tonal language, and the syllabic nuclei (including vowels, diphthongs and triphthongs) are always pronounced with an accompanying tone, of which there are five in S.V. These tones are crucial to the understanding of word meaning. Thomson (1959, p. 457) describes these phonemes as a combination of pitch height and contour. He says they generally have somewhat lower allophones with /\.\/ than with /\.,\/, somewhat higher allophones with /?/ and a greater range between the lowest and highest parts of the syllabic contour with /\_//. Vowels are short with high tones, half-long with low tones and long with mid-tones, according to Nguyễn
(1970, p.130) indicating that "length" is part of the tones and not belonging to "segmental phonology".

There are only about 900-900 distinct syllables, not including tones, but with the phonemic tones included, there are about 4,500 syllables in S.V. (De Francis, p.7).

3.1 Vowel Phonemes

There are twelve vowel symbols in the orthography of Vietnamese, and eleven generally accepted single vowel phonemes. There are different opinions about the number of vowel phonemes, and way of describing them.

For example, Buố (1990, p.8) says there are eleven vowel phonemes, two of which are checked. He also says there are twenty-five diphthongs and fourteen triphthongs (1990, p.9,10).

Vowels: /i, e, ξ, a, ē, ə, Λ, ɔ, ə, u, ə/¹

Diphthongs: /wi, we, wɛ, wa, wɔ, wɔ, ej, ej, aj, əj, ɔj, uj, uj, iw, ew, gw, aw, əw, əw, ɔw, iH, uH, uH/

Triphthongs: /wiH, wiw, wew, wej, waw, waj, wɔw, waj, iHw, uHw, uHj, uHj/

Checked vowels: /Λ, ɔ/

¹ The order used by Buố is as follows: /i, e, ξ, ə, ə, a, u, ə, ɔ, ə, Λ/. In each case however, I have changed the order to be consistent with my own for greater ease of reference.
Le (p.58), claims that there are eleven "short" vowels and five "long" vowels. Later he refers to these as "diphthongised" (p.75, 76). He says four of the phonemes are checked.

Short vowels: /i, e, e, a, e, a, o, u, y, w/¹
Long Vowels: /i:, e:, a:, o:, u:, w:/
Checked vowels: /è, ã, ë, é, â:/

Nguyễn (p.129, 132) says there are eleven vowels, two of which are checked, and four diphthongs.

Vowels: /i, e, e, a, ä, â, o, u, o, u/²
Diphthongs: /i, äu, ü, uâ/
Checked vowels: /â, â/

In the phonetic transcriptions of the Vietnamese vowels, I disagree with Nguyễn's usage of Vietnamese orthography in the cases of /â, â, o, u/, preferring to use the I.P.A. symbols /è, ã, ë, é, o, u/ which enable greater ease of understanding and comparison with vowel phonemes described by others.

From an auditory viewpoint, the symbol /û/, preferred by Buu, is close to the /û/ used by Lê. However /û/ is the symbol for a more rounded vowel and is therefore not suitable from

¹ Lê uses the order: /i, e, e, a, e, a, u, y, w/.
² Nguyễn uses the order: /i, e, e, a, u, o, o, â, â/.
the articulatory viewpoint.

He fails to explain his usage of the symbol /ɬ/ in words where I use /ʃ/. The symbol has been used by American linguists, but a linguist such as Gleason (1969, p.319) uses it without explaining its value. In the text, however, I prefer to use the symbol /ʃ/ in its place.

All the writers agree that there are eleven single vowel phonemes, but each choose different ways to describe them. However, even though their transcriptions are different, they actually seem to refer to the same sounds. In this study, my preference is to follow the I.P.A., giving greater ease of comparison with A.E. for which it is usually used.

In the case of the diphthongs and triphthongs, at first glance there appears to be a great difference, but in fact this is more a case of difference of interpretation, than of disagreement. Buu claims there are twenty-five diphthongs and fourteen triphthongs, whereas Lê describes only five diphthongs, and Nguyễn, just four. In fact, the diphthongs and triphthongs of Buu are roughly equivalent to the sounds that are described in detail as allophones by Lê and Nguyễn, but because they are written in a way that is intended for students to use with an accompanying tape, they are not phonetically described.
FIGURE 1. The Vowels of South Vietnamese (according to LE, 1973, p. 62)

On the whole I agree with Le's diagram (figure 1), although I believe the /a/ is more fronted. The symbols I prefer to use in this study are the same as those used by Le, but ordered as follows:

/ i, e, ë, a, e, ë, o, u, y, w /

/ i /

Le (1973, p. 62, 63) says /i/ is realised by three allophones:

/ij/ (as in khi /xij/) which is lax and diphthongised in open syllable.

/i/ (as in tim /tim/) before /p, t, m, n/.

/i/ (as in bich /bic/) which is more relaxed and open, elsewhere.

Nguyen (1970, p. 131, 132) says /i/ is realised by four allophones:

/ij/ (as in dip /jip/) after /c, j, n/ and before /p, w, m/.

/ij/ (as in chin /cin/) after /c, j, n/ and before /t, n/.

/ij/ (as in liêm /lim/) except after /c, j, n/, final and
/i/ is considered to be the main variant of this S.V. phoneme and is almost the same as A.E. /i/ (as in fit /fit/).

/e/

Le (p.63) says /e/ is realised by two allophones:

/ɛ/ (as in het /het/).
/ɛj/ (as in che /cej/) which is long and realised as a diphthong.

Nguyen (p.132) says /e/ is realised by three allophones:

/ɛ\ (as in bep /bep/) before /p, w/ and final.
/ɛ/ (as in em /em/) before /m/.
/ɛj/ (as in ten /ten/) before /t, n/.

/e/ is close to A.E. /e/ (as in bet /bet/), but longer.

/ɛ/

Le (p.63) says /ɛ/ is realised by three allophones:

/ɛ\ (as in nghe /ɲɛ\/), realised as a diphthong in open syllable.
/ɛ/ (as in chep /çep/) which is short and close.
/ɛj/ which is open, elsewhere, except before /t, n/.

Nguyen (p.132) says /ɛ/ is realised by four allophones:
\[\varepsilon_1\] (as in \text{hep} \ ([\text{hep}]) \ before \ /p/.
\[\varepsilon_2\] (as in \text{heo} \ ([\text{heo}]) \ before \ /w/.
\[\varepsilon_3\] (as in \text{tem} \ ([\text{tem}]) \ before \ /m/.
\[\varepsilon_4\] (as in \text{nghe} \ ([\text{nghe}]) \ final \ and \ before \ /k, \ \eta\).

\[\varepsilon\] is close to A.E. \[\varepsilon\] (as in \text{fat} \ ([\text{fət}]), \ not \ /æ/ \ as \ in \ \text{R.P.}

\[\dot{a}\]

 Lê (p.70,71) says \[\dot{a}\] is realised by two allophones:
\[\acute{a}\] (as in m\acute{a}c \ ([\text{mak}])) \ which \ is \ retracted \ before \ /k, \ \eta/.
\[\grave{a}\] (as in nhat \ ([\text{hat}])) \ elsewhere.

\[\dot{a}\]

 Nguyễn (p.133) says \[\dot{a}\] is realised by four allophones:
\[\acute{a}_1\] (as in th\acute{a}c \ ([\text{tʰæt}])) \ before \ /p, \ k/ \ and \ after \ /t^{h}, \ c, \ j, \ \eta, \ h/.
\[\acute{a}_2\] (as in th\acute{a} \ ([\text{tʰæ}]) \ final \ and \ before \ /w, \ j, \ \eta/, \ after \ /t^{h}, \ c, \ j, \ \eta, \ h/ \ and \ elsewhere.
\[\acute{a}_3\] (as in h\acute{am} \ ([\text{ham}]) \ before \ /m/, \ after \ /t^{h}, \ c, \ j, \ \eta, \ h/ \ and \ elsewhere.
\[\acute{a}_4\] (as in c\acute{am} \ ([\text{kam}]), \ elsewhere.

\[\dot{a}\] sounds close to A.E. (as in car \ ([\text{kaɾ}])) \ but \ higher, \ almost \ as \ in \ \text{R.P. English fat} \ ([\text{fət}]).
\[\varepsilon/\]

Lê (p.69,70) says /\varepsilon/ occurs only before /p, k, \j/ as a "checked" vowel (meaning it is always followed by a final consonant phoneme). This phoneme is realised by two allophones:

\[\varepsilon_v\] (as in khâch [\varepsilon k\j]), which is open before velars.

\[\varepsilon_i\] (as in tát [t\varepsilon t\j]), which is close, elsewhere.

Nguyễn (p.133) prefers to use the Vietnamese /a/ instead of the I.P.A. /\varepsilon/, but agrees that this checked phoneme has two allophones.

\[\varepsilon_1\] (as in ât [\varepsilon k\j]) before /k, \j/.

\[\varepsilon_2\] (as in áp [\varepsilon p\j]) before /p, w, m, t, n/.

\[\Lambda/\]

Lê (p.70) says /\Lambda/ (as in càt [k\Lambda t\j]) occurs only as a checked vowel before /p, k, \j/ and has only one allophone.

Nguyễn (p.132) says this this checked vowel is realised by two allophones. He prefers to use the Vietnamese /\Lambda/ instead of the I.P.A. /\Lambda/. The allophones are:

\[\Lambda_1\] (as in phàv [\Lambda f\j]) after /b, f, w, m, c, j, l, n, x, g, \j/ and before /j/.

\[\Lambda_2\] (as in tâv [\Lambda t\j]), after /t, s, t\h, d, t, s, r, n, k, h/, before /j/ with heavy stresses and elsewhere.

In some morphemes or careless speech /\varepsilon/ and /\Lambda/ are often in free variation. For example tôi tâp can be pronounced as
(tıy týp) or (tıy típ) (Lê, p.70).

/o/

Lê (p.67) says /ɔ/ (as in son [sɔn]) is realised by three allophones:

/ɔ̣̀u/ (as in kho [kʰu]) which is realised as a diphthong in open syllable.

/ɔ̣j/ (as in hom [hɔm]) which is short before /p, m/.

/ɔ̣a/ (as in son [sɔn]), which is short and retracted before /j, ɲ, k/.

Nguyễn (p.134) agrees this phoneme has three allophones:

/ɔ̣1/ (as in voi [voi]) before /j, ɲ/.

/ɔ̣2/ (as in qui [çi]) before /k/.

/ɔ̣3/ (as in góp [gɔp]), final and before /p, m/.

This phoneme is somewhat more open than A.E. /ɔ/ (as in not [not]).

/ø/

Lê (p.66) says /ø/ is rounded and realised by two allophones:

/ø̣u/ (as in cô [kow]) which is lax and realised as a diphthong in open syllable.

/ø̣/ (as in lôm [lôm]) before /p, k, m, ɲ/.

Nguyễn, (p.134) says /ø/ has three allophones:

/ø̣1/ (as in kho [kʰo]) before /ŋ/.
\(\text{o}_2\) (as in ng\(^\hat{}\) (ŋo\(^\hat{}\) ), final and before /m, j, k/.

\(\text{o}_3\) (as in h\(^\hat{o}\) (h\(^\hat{o}\) ) before /p/.

This phoneme is similar to A.E. \(^\text{O}\) (as in caught (k\(^\text{O}\) ) in its non-diphthongised forms.

\(\text{u}/

Le (p.65,66) says /u/ is realised by three rounded, lax allophones:

\(\text{u}^w\) (as in chu (cu\(^w\) ) which is diphthongised in open syllable.

\(\text{u}\) (as in chung (cu\(^\text{u}\) ) which is open before /ŋ/.

\(\text{u}\) (as in l\(\text{u}\) (l\(\text{u}\) ) which is close, elsewhere.

Nguy\(\text{ên}\) (p.134) agrees that this phoneme has three allophones:

\(\text{u}_1\) (as in l\(\text{u}\) (l\(\text{u}\) ) before /j/.

\(\text{u}_2\) (as in sup (su\(^\text{u}\) ), final and before /p, m/.

\(\text{u}_3\) (as in l\(\text{u}\) (l\(\text{u}\) ) before /k, ŋ/.

This phoneme is close to R.P. /u:/ (as in food (fu:d/)) and A.E. /u/ (as in would (w\(\text{u}\)/).

\(\text{γ}/

i\(\text{ê}\) (p.68,69) says /γ/ is realised by three allophones:

\(\text{γ}^\gamma\) (as in tho (th\(\gamma\) ) which is diphthongised.

\(\text{γ}\) (as in choi (c\(\gamma\) ) which is short.

\(\text{γ}\) (as in l\(\text{o}\) (l\(\text{o}\) ) which is short and retracted.
Nguyễn (p.133,134) says this phoneme is realised by two allophones. He prefers to use the Vietnamese /ơ/ instead of the I.P.A. /-scripts/. The allophones are:

/ơ₁/ (as in lớp /lɔp/) before /p, m, k, ŋ/.
/ơ₂/ (as in to /tɔ/) final before /j/.

/ơ/ sounds auditorially more like /ə/ or even /œ/, but most use /ơ/, I shall use it too. It is unrounded.

/w/

Lê (p.67,68) says /w/ is realised by two allophones:

/w/ (as in xu /xʊ/) which is a rising diphthong in open syllable.
/w/ (as in khác /dʌk/) before /k, ŋ, w/.

Nguyễn (p.133) says this phoneme is unrounded and realised by three allophones. He prefers to use the Vietnamese /ư/ instead of the I.P.A. /w/. The allophones are:

/ư₁/ (as in chung /çʊŋ/) after /c, j, ŋ/ and before /k, ŋ/.
/ư₂/ (as in dűi /dʌi/) after /c, j, ŋ/ and before /j/ or initially before /p, m, k, ŋ/.
/ư₃/ (as in thúi /θuí/) after all consonants except /c, j, ŋ/ or initially before /w, j/, and finally.

/ư/ is closer to /u/ from an auditory viewpoint (see above.
p.10) but I will use /u/ as most others do.

The front vowels /i, e, ɛ/ and the back vowels /ʌ, ə, u, ŋ, w/ are lax and open, all being diphthongised in open syllable. The central phonemes /a, ɔ, ʌ/ occur before finals /p, t, k, m, n, ŋ, ɾ, j/.

There are five long vowel phonemes realised as mono-phonematic diphthongs /iː/, /ɛː/, /ʌː/, /uː/, /ʊː/ (Lê, p.72). As stated above (p.9) they appear with mid-tones.

/iː/
Lê (p.72) says /iː/ is realised by three allophones:
/iːə/ (as in tiɛu /tiɛw/).
/iːə/ (as in chiɛa /ciɛa/) in open final syllable.
/iːə/ (as in chiɛc /ciɛc/).

/iː/ sounds similar to A.E. /iə/ (as in beer /biə/).

/ɛː/
Lê (p.76) says /ɛː/ is realised by two allophones:
/ɛːi/ (as in əch /ɛːc/) before palatals.
/ɛːu/ (as in əng /ɛːŋm/) before double closure velars.

/ʌː/
Lê (p.76) says /ʌː/ is realised by two allophones:
/ʌːi/ (as in xečh /sʌːc/) before palatals.
\( /\text{u}:/ \) (as in dòng \( /\text{d}\text{o}\text{n}\text{g} / \)) before velars.

In rapid or careless speech \( /\text{e}:/ \) and \( /\text{u}:/ \) are in free variation.

\( /\text{u}:/ \)

Lê (p.74) says \( /\text{u}:/ \) is realised by three allophones:

\( /\text{u}^{\text{e}}:/ \) (as in nguéi \( /\text{n}\text{g}\text{u}\text{ê}\text{i} / \)) before \( /\text{j}/ \).

\( /\text{u}^{\circ}:/ \) (as in bu¿m \( /\text{b}\text{u}\text{¿}\text{m} / \)) before \( /\text{m}/ \).

\( /\text{u}^{\#}:/ \) (as in chuong \( /\text{c}\text{h}\text{u}\text{¿}\text{n} / \)) before velars or in open syllable.

\( /\text{u}:/ \) sounds like A.E, \( /\text{u}:/ \) (as in sewer \( /\text{s}\text{u}\text{e}\text{r} / \)).

\( /\text{u}:/ \)

Lê (p.73,74) says \( /\text{u}:/ \) is realised by two allophones:

\( /\text{u}^{\text{o}}:/ \) (as in cvóc \( /\text{c}\text{v}\text{¿}\text{c}\text{o}\text{c} / \)) unrounded for \( /\text{u}:/ \), and before a velar stop.

\( /\text{u}^{\text{z}}:/ \) (as in twói \( /\text{t}\text{w}\text{¿}\text{o}\text{¿}\text{i} / \)) unrounded for \( /\text{u}:/ \), and before \( /\eta, \text{m}, \text{j}/ \) in open syllable.

Nguyễn (p.137,38) has a different approach when describing the long vowels and diphthongs. He says he agrees with Thomson 1959,p.454-76) that S.V. presents indeterminacy, multiple analysis, and asymmetry. Because of this, and for reasons of practicality in contrasting the English and Vietnamese vowel systems, Nguyễn has treated homorganic diphthongs \( /i, e, ê, u, ö/ \) as single vowels, and phonetic diphthongs
/ʊ, ʊ, i, ău/ as phonemic units when followed by a consonant. Also, other phonetic diphthongs (such as au, aj, oj, uj, iu etc.) are treated as vowels and semivowels when they cannot be followed by a consonant.

Within the framework of this thesis it has not been possible to solve the problems of the minor differences between Lê and Nguyễn. Since both authors have been meticulous in their description of the variants, I can be confident that their descriptions contain the details needed to establish correspondences between variants in the subjects' approxilect, and variants described by Lê and Nguyễn. In other words, the account I have just given will be adequate for my purpose.

Neither Buệ, Lê nor Nguyễn are able to give absolute or conclusive answers to the question of the number and description of phonemes in the Vietnamese inventory of vowels.

3.2 Distribution of Vowels
Lê (p.65) says the front vowels /i, e, ɛ/ have diphthongisation in open syllable. In closed syllable they are realised as monophthongs. They have a wide distribution after initial consonants and are restricted before final consonants.
The central vowels /ʌ, ɔ, a/ have a symmetry of distribution before final consonants /p, t, k, m, n, ŋ, w, j/ and are sometimes collapsed into the same sound in rapid speech.
The back vowels /o, o, u, ɔ, ʊ/ have diphthongisation in open syllable, and the lax and open alveolar finals are often replaced by their velar counterparts.

3.3 Consonant Phonemes

There are seventeen consonant symbols in the orthography of Vietnamese and twenty-one phonemes, unless you choose to consider /p/ as a phoneme and not an allophone, in which case there are twenty phonemes. All authors agree that /w/ and /j/ (as in pài (wa/j)) are semi-vowels, but there is some disagreement as to the description of some of the other phonemes, which are described below (see fig. 2).

Two prominent features in the secondary articulation of Vietnamese that are worthy of note are simultaneous double closure and labialisation (Lê, p. 43, 44).

There are two types of double closure occurring after back vowels:

/kʰ/ double closure plosive which is in complementary distribution with /k/. This consonant may disappear when the lexeme receives a ı̄c tone.

/jʰm/ double closure nasal. This consonant is more closed when the lexeme receives a ńąng tone (Lê, p. 44).

The other secondary feature of articulation is labialisation, which is the modification of an initial consonant by the
rounding of the lips. It is phonemically significant when occurring before non-back vowels (as in quă /kwɑ/). The following consonants have labialisation: /tw, thw, dw, t\w, cw, kw, sw, yw, hw, nw, jw, yw, lw, jw/ (Lê, p.44).

Buû (p.11,12) says there are 21 consonant phonemes:
/b, t, t^3, t^\w, d, c, k, f, v, s, j, x, g, h, m, n, n, j, l, r, j/. Yet, on the following page, he uses /p/ (as in dąp /dąp/). He also uses the semi-vowel /w/ in many of the diphthongs and triphthongs described (see his description of vowels page 10).

Lê (p.42,43) claims there are 22 consonant phonemes:
/b, t, th, t^\w, d, c, k, f, v, s, j, x, y, h, m , n, n, j, l, r, w, j/. He sees /p/ as an allophone of /b/.

Nguyễn (p.16) says there are 22 consonant phonemes:
/p, b, t, t^h, t^\w, d, c, k, f, v, x, s, j, g, h, m, n, n, j, l, r, w, j/.²

The symbols I prefer to use in this study are ordered as follows:
p /p/ b /b/ t /t/ th /t^\w/ t /vt/ d /d/ ch /c/ k /k/,
, ph /f/ v /v/ s /s/ s /ʃ/ kh /x/ a, g /ɣ/ h /ŋ/ m
/m/, n /n/, nh /ŋ/ ng /ŋ/ l /l/ r /r/ u, o /w/ d, gi /j/.

1. Buû uses the order: /b, t, d, v, j, s, m, n, l, r, h, t^\w, f, j, c, x, j, g, y, k/.
2. Nguyễn uses the order: /p, b, t, t^\w, a, t, c, k, f, v, s, j, x, g, h, l, m, n, n, j, r, w, j/.
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<th>Retroflex</th>
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</table>

**FIGURE 2. The Consonants of Vietnamese** (similar to Nguyễn).

/b/

/b/ (as in báo /boː/) is a voiced implosive bilabial plosive, occurring in initial position. It is preglottalised and often imploded, tending to be explosive when occurring in rapid speech or preceded by a bilabial (as in lôp ba /ləp boː/).

Lê (p.47) says /b/ has two allophones:

/b/, tending to be explosive in rapid speech when preceded by a bilabial (as in làm báo /ləm boː/).

/p/ (as in nyp /nyp/), voiceless and unreleased in final position.
Nguyen (p.20) says /p/ (as in hop /hop/) is a voiceless, unreleased, bilabial final plosive. It is commonly described as an allophone of /b/.

/th/
/th/ (as in tha /tʰa/) is a voiceless, aspirated apico-dental plosive which is released with a very audible puff of air.

/a/
/d/ (as in di /di/) is a voiced, preglottalised, apico-alveolar plosive which is often imploded, occurring in initial position.

/t/
/t/ (as in ta /ta/) is a voiceless, unaspirated dental plosive.

/l/ (as in trai /təj/) is a voiceless, apical alveolar retroflexive plosive which is slightly affricated. It occurs in initial position, and is replaced by /c/ in lower siciects of S.V.

/c/
Le, (p.48) says /c/ is a voiceless lamino-palatal plosive which is unreleased in final position. He says it has two allophones:
/c/ (as in chon /cʰon/) in initial position.
/c-/ (as in xich /sic-) unreleased in final position.
 Lê (p.49) says /c/ and /t/ are very similar, the main difference being that /c/ is retroflexive. In S.V. /t/ is replaced by /c/ in lower sociolects.

/k/

/k/ (as in cucion /kukP/) is a voiceless, unaspirated, dorsovelar plosive. Lê (p.49) says this phoneme has three allophones and five diphthongos which are unreleased in final position (using Hammarström's terminology, 1976, p.4).

\[^k\] (as in ky [kj]) initially

\[^k\] (as in cam /kam/) initially released.

\[^k\] (as in bac /bak/) final and unreleased.

\[^k\] (as in cu /kw/) initially released.

\[^k\] (as in chuc /cwk/) finally unreleased.

\[^k\] (as in luc /luk/) final double closure velar.

Nguyêń (p.21) says this consonant is voiceless dorso-velar, realised by five allophones:

/k/ (as in ca /ka/) in initial position.

/kP/ (as in cucion /kukP/) with simultaneous bilabial closure, final after /u, w/.

/kw/ (as in hót /hokw/) strongly labialised, final after /o/.

/kw/ (as in ngót /ngokw/) weakly labialised, final after /o/.

/kk/ (as in lúk /lúk/) unreleased, final except after /u, w, o, o/.  

36
/f/

/f/ (as in pʰa [pʰə]) is a voiceless labio-dental fricative occurring in initial position.

/v/

/v/ (as in və [və]), like /f/, is a voiced, labio-dental fricative which may be replaced by the semi-vowel /j/ in careless speech.

Nguyen (p. 21) says /v/ has basically two variphones in S.V., according to the circumstance of the idiolect:

/v̥j/ palatalised, which is the most common.

/kʰv̥p̥j/ preglottalised or not, palatalised stop, which seems to be used in spelling pronunciation.

/s/

/s/ (as in xa [sa]) is a voiceless alveolar fricative, occurring only in initial position. It is dental in S.V. because in its production the air stream is forced out through closed teeth.

ʃ/ 

ʃ/ (as in sɔn [sɔn]) is a voiceless retroflex unrounded fricative in initial position.

/x/

Te (p. 52) says /x/ is a voiceless dorsovelar unrounded fricative.
It is realised by three allophones when combined with front, central and back vowels. Lê does not provide any actual examples of these allophones.

Nguyễn (p. 22) describes this consonant as having two allophones: 
/x/ (as in khi /kʰi/) initial after final /k/ or /ŋ/ in the previous syllable.
/kʰi (/kʰi/) initial after final /k/ or /ŋ/ in the previous syllable.

/ŋ/ Lê (p. 52) says /ŋ/ is a voiced dorsovelar fricative which is sometimes produced as a stop /g/, especially after /ŋ/. It is manifested by three allophones.
\[ \text{g} \] (as in ghi /gʰi/).
\[ \text{g} \] (as in gam /gʰam/).
\[ \text{g} \] (as in gu /gʰu/).

Nguyễn (p. 22) says /g/ is realised by two allophones:
\[ g \] (as in ghe /gʰe/) initially, except after a final /k/ or /ŋ/ in the previous syllable.
\[ g \] (as in chiec ghe /cʰiɛ̃kʰ e/) initial stop after /k/ or /ŋ/.

/h/
/h/ (as in hang /hᵃŋ/) is a voiceless glottal fricative in
initial position.

/m/

/m/ is a voiced bilabial nasal with the air stream moving out through the nose. It has two positional variants:

/m/ (as in ma [ma]), initially released.

/m/ (as in làm [làm]), weak and finally released.

/n/

Le (p.54) says /n/ is a voiced, alveolar nasal with the air stream moving out through the nasal cavity. It is realised by two allophones:

/n/ (as in noí [noí]), initially released.

/n/ (as in tin [tin]), unreleased and final.

Nguyễn (p.22,23) says /n/ has three allophones:

/n/ (as in nêñ [nêñ]), voiced apico-dental nasal which is initial and final, except before /t, d/ or a pause.

/n/ (as in nêñ di [nêñ ?di]), voiced apico-alveolar nasal which is final before /d/.

/n/ (as in nêñ tra [nêñ tä]), voiced apico-alveolar retroflex nasal which is final before /t/.

/n/ (as in nha [nha]) is a voiced palato-nasal with the air stream moving out through the nasal cavity, occurring initially.
Nguyễn (p. 23) says /ŋ/ is voiced dorso-nasal and realised by four allophones:

/ŋ/ (as in ngang [ŋaj]) initial and final except after /u, w, o, y/.

/ŋ̊/ (as in dung [dun̊j]) with simultaneous labial closure, final after /u, w/.

/ŋ̊ʷ/ (as in mon [mɔŋ̊w]) with strong labialisation, final after /o/.

/ŋ̊ʷ j/ (as in nong [ŋŋ̊wːj]) with weak labialisation, final after /ɔ/.

/1/

/1/ (as in lúc [luːj]) is a voiced alveolar lateral. The area of contact between the tongue tip and the roof of the mouth is wide, with the air stream escaping through the sides of the tongue.

/1/ is not released as it is in English.

/r/

Nguyễn (p. 23) says /r/ is a voiced alveolar retroflexive vibrant in initial position. It has three variants:

/r/ (as in roi [ʁɔj]) commonly produced by a series of rapid taps or trills.

/r̃/ (as in rǎng [ʁəŋ]) which is produced by a single tap.

/z/ (as in ra [zəj]) where the airstream moves out with friction.
/w/
Le (p.56) says /w/ (as in uy [wij]) is a bilabial semi-vowel in both initial and final position. In S.V. it is realised as /v/.
Nguyen (p.23) says this phoneme has three allophones:
\[u\] (as in tuan [tuan]) which is a close high back rounded vocoid, initial before /y/ and final after /i, u, å/.
\[u\] (as in toa [tao]) which is an open high back rounded vocoid, initial before syllabics other than /y/, and final after /e/ and /å/.
\[u\] (as in heo [hæo]) which is a close mid back rounded vocoid, final after /ɛ/ and /a/.

/j/
Le (p.56) says /j/ is a palatal semi-vowel with two allophones:
\[j\] (as in āe [jej]) which is a high front fricative.
\[j\] (as in da [da]) low and less front, occurring with non front vowels.

Nguyen (p.23,24) says this semi-vowel is a front unrounded vocoid which is lamino alveolar. It is realised by two allophones:
\[i\] (as in luo [luo]) where it is close, initial before /i, u/, and final before /u, u/.
\[i\] (as in gio [gio]) where it is open, initial except before /i, u/, and final after /o, y, a, å/.
3.4 Distribution of Consonants

All consonantal phonemes excepting /p/ can occur in initial word position and those that can appear in final position are /p, t, c, k, m, n, n̄, n̄j, w, j/. Most authors agree that all the final consonants are unreleased (e.g. Thomson, 1965, Lê, 1973 and Mannell, 1968). The phonemes /v, t̞, j, r/ disappear in the phonemic inventory of lower sociolects in S.V. (Lê, p.39).

Unlike the vowels in Vietnamese, the consonants do not have many allophones, and there are no consonant clusters. Allophonic variations of the consonant phonemes are caused by their vocalic environment.

There is not much allophonic realisation as in the case of English which may be due to the absence of consonant clusters.

Thomson (p.455) says that in S.V., a syllable is a fraction of utterance beginning with an onset of stress and ending immediately before the next onset of stress, or before a pause.

Nguyễn (p.135) says the formula of the canonical forms of the Vietnamese syllable is shown as follows:

$$\left[ T^C \right] \left[ N [V] \right] \left[ C \right]$$

This formula includes an optional onset slot containing a consonant and optional semi-vowel. The nucleus contains a diphthong or vowel, and the terminus contains an optional consonant or semi-vowel.
consonant or semi-vowel.

A less complicated and more explicit formula however, would use more recent conventions

\[(C\{\{j\}\} \{vv\}\{j\}\} \{w\}\{C\})\]

In this formula C represents a consonant, V a vowel, VV a diphthong and /j, w/ are semivowels.
CHAPTER 4

COMPARISON OF AUSTRALIAN ENGLISH AND SOUTH VIETNAMESE.

4.0 Correspondences between L1 and L2

Earlier studies in contrastive analysis established correspondences between source language and target language (L1 and L2), claiming that a study of the vowel and consonant systems could predict the errors made by the learners.

Corder (1981, p.47) says that the degree of mismatch (between the ability of the learner and the target language) is a "quantitative" assessment and the nature of mismatch is a "qualitative" assessment, a problem of diagnosis. He goes on to say (p.52) that effective remedial teaching requires that we should understand the nature of the pupils' difficulties by understanding the cause of the error, and transfer this knowledge to the student. In the present study, the causes of errors are shown. This knowledge has certainly made classes more meaningful to both teacher and students, but to what extent this has been helpful to the students' learning is unknown.

Later orientations have shown that all language errors cannot be predicted, so that the importance of interference has tended to become minimised. Krashen (1988, p.64) asks where first language interference fits in the theoretical model for second language performance, given that many errors are not traceable
to the first language, but are common to second language performers of different linguistic backgrounds. He goes on to say (p.65) that first language influence appears to be the strongest in word for word translations of phrases, and weaker in bound morphology (e.g. omissions of plurals on nouns).

I deduce that in this case there will be strong L1 interference in the pronunciation of Vietnamese learners of English which will be compounded by other factors such as their first L2 learning environments being "acquisition poor", together with other problems related to morphology (such as plural endings and verb endings) which may not be due to L1 interference (Krashen p.66). I would therefore predict that in comparing L1 and L2, some of the results of this comparison will be able to explain some of the pronunciation errors of the learners. However, there will also be errors that could not be predicted.

According to Hammarström (1978), "postulated correspondences" between two languages are established on the basis of properties judged by the linguist to be similar, but without consideration of the "empirical correspondences" based on the errors of the learners. It would be of some interest to see exactly how far postulated correspondences can be used as a kind of hypothesis to be tested by the later auditory analysis. It is certainly helpful to know just what probable errors to "listen for", even though a good auditory study should reveal other errors of the sounds involved.
When phonemic systems are compared, it is not usual to include allophones, but as they are important in this study of learners they are also included. In order to interpret the findings of both Lê and Nguyễn more accurately, I have recorded three South Vietnamese speakers who have approximately the same way of pronouncing, to read samples of each allophone.

Because this study is to be used only as a reference for the main purpose of this thesis, I accept both authors when they agree, and when one has additional allophones, I accept that also. However, when the authors appear to disagree, I will make my own decision based on my recordings.

4.1 Possible interference of Vietnamese tones and shortened vowel sounds

Because Vietnamese is a tonal language, meaning that pitch is used in individual syllables to contrast word meanings, and English is a language of intonation where pitch is particularly important for longer segments than words, there will be difficulty in the appropriate use of intonation in word syllable and contrasting consonants.

Nguyen Dang Liêm (p.131) says that S.V. vowels are shortened when followed by final stops, semi-vowels or nasals, meaning that there could be problems of vowels being unduly shortened when they are followed by a consonant.
Generally, the correct use of English intonation and stress will probably be difficult for Vietnamese learners, but this problem is outside the scope of this thesis.

4.2 Vowel phonemes.

The A.E. vowels are shown in figure 1. With regard to the allophones in which the authors appear not to agree (see fig.5) I have resolved the problem in the following way:

/ɪ/

In the case of this phoneme, Le hears three allophones whereas Nguyen hears four. However, I hear /ij/ (as in khi), (Le), as a separate allophone, meaning that I hear a possible five allophones.

![Figure 5: Australian English vowels and variants.](image-url)
In the case of this phoneme, Le hears one allophone, and Nguyen hears two. However, I hear /ʌ/ (as in cat) (Lê), which is shorter, as a separate allophone, meaning that I hear a possible third allophone.

In the case of this phoneme, Le hears two allophones, and Nguyen hears three. However, I hear /ɔ̯/ (as in Đô) (Lê) which is in open syllable, as a separate allophone, meaning that I hear a possible fourth allophone.

---

**FIGURE 2.** South Vietnamese vowels and variants (Lê & Nguyễn).

<table>
<thead>
<tr>
<th>Vowel</th>
<th>Le Variants</th>
<th>Nguyen Variants</th>
</tr>
</thead>
<tbody>
<tr>
<td>i: i̯, î̯, ĩ̯, ī̯ (Lê)</td>
<td>i̯, î̯, ĩ̯, ī̯ (Nguyen)</td>
<td>i̯, î̯, ĩ̯, ī̯ (Nguyen)</td>
</tr>
<tr>
<td>u: û̯, ū̯ (Lê)</td>
<td>û̯, ū̯ (Nguyen)</td>
<td>û̯, ū̯ (Nguyen)</td>
</tr>
<tr>
<td>e: e̯, ê̯, ẽ̯, ē̯ (Lê)</td>
<td>e̯, ê̯, ẽ̯, ē̯ (Nguyen)</td>
<td>e̯, ê̯, ẽ̯, ē̯ (Nguyen)</td>
</tr>
<tr>
<td>o̯: o̯, ô̯, õ̯, ō̯ (Lê)</td>
<td>o̯, ô̯, õ̯, ō̯ (Nguyen)</td>
<td>o̯, ô̯, õ̯, ō̯ (Nguyen)</td>
</tr>
<tr>
<td>a: a̯, â̯, ã̯, ā̯ (Lê)</td>
<td>a̯, â̯, ã̯, ā̯ (Nguyen)</td>
<td>a̯, â̯, ã̯, ā̯ (Nguyen)</td>
</tr>
</tbody>
</table>
4.3 Postulated correspondence of vowels

In contrasting the two quadrilaterals (figs 1&2) to predict production problems of S.V. learners of English, firstly it is clear that there will be problems with A.E. phonemes that have no S.V. correspondence. These are: /I/ /ʊ/ /ɔː/ /ɜː/.

In cases where S.V. corresponds with A.E. phonemes, but not in their lengthened forms, there could be problems in lengthening. These are: /aː/ /ə:/.

/I:/

A.E. /iː/ is longer than the allophones of S.V. /i:/, meaning that learners could tend to somewhat shorten it.

/I/

A.E. /I/ is less fronted than S.V. /i/, but close in sound. Also S.V. has more allophones than A.E., meaning that learners could mistake this phoneme for S.V. /i/ or its allophones, but this should not be a severe problem.

/e/

A.E. /e/ is shorter than S.V. /e/ and closer in sound. The S.V. allophones do not correspond with the A.E. allophones, meaning that there will probably be some interference from the S.V. sound.
/ɛ/
A.E. /ɛ/ is close to S.V. /ɛ/, as are its allophones, meaning that learners will have no major problems approximating this phoneme or its allophones.

/aː/
A.E. /aː/ is close to S.V. /a/ and its allophones but a little lower, meaning that learners will have relatively few problems approximating this phoneme although the A.E. sound is longer.

/a/
A.E. /a/ is shorter than S.V. /a/, meaning that learners will probably tend to lengthen this phoneme.

/ə/
A.E. /ə/ is more fronted and relaxed, but auditorily similar to S.V. /ɛ/, meaning that learners will probably approximate this phoneme and its allophones.

/ɜː/
A.E. /ɜː/ has no correspondence to S.V., so this phoneme and its allophones could become shortened to become similar to S.V. /ɛ/.

/ɔ/
A.E. /ɔ/ is more close than S.V. /ɔ/, meaning that there may be some interference, but this should not be a serious problem.
/ɔ:/

A.E. /ɔ:/ and its allophones have no correspondence to S.V., so they could become shortened to become similar to S.V. /ɔ/.

/u/

A.E. /u/ is lower and more back than S.V. /u/, so that /u/ and its allophones could be changed to become similar to S.V. /u/ and its allophones, particularly /u/, /u̯/, /ů̯/. 

/uː/ 

A.E. /uː/ is close to S.V. /uː/ except that the diphthongisation of the allophone occurs at the beginning of a word, whereas in S.V. it occurs at the end. However, other glides in allophones of S.V./i/ could be used to approximate the allophones of A.E. /uː/, resulting in a rather fronted approximation.

4.4 Postulated correspondence of diphthongs 

Although S.V. has more diphthongs than A.E., as well as triphthongs, they do not always correspond. Also, S.V. diphthongs are mostly free, only being followed by a consonant in a few instances.

/aɪ/

A.E. /aɪ/ closely corresponds auditorily with S.V. /aj/, but in S.V. this diphthong is always free, meaning that it may be shortened when followed by a consonant.
/eɪ/
A.E. /eɪ/ has no correspondence with S.V., meaning that subjects may tend to shorten it to the vowel it most sounds like and pronounce it like S.V. /a/, which approximates A.E. /E/.

/ɔɪ/
A.E. /ɔɪ/ corresponds auditorily with S.V. /ɔj/, but in S.V. this diphthong is always free, meaning that it may be shortened when followed by a consonant.

/au/
A.E. /au/ corresponds auditorily with S.V. /aw/, but in S.V. the diphthong is always free, meaning that it may be shortened when followed by a consonant.

/ɔʊ/
A.E. /ɔʊ/ has no correspondence with S.V., meaning that subjects may shorten it to the vowel it most sounds like and pronounce it like S.V. /ɔ/.

/ɪə/
A.E. /ɪə/ closely corresponds with S.V. /iə/, which can also be followed by a consonant. This diphthong should not present any problems to speakers of S.V.

/ɛʔ/
A.E. /ɛʔ/ is similar to S.V. /ɛj/ but in S.V. it is not followed
by a consonant, meaning that it may be shortened if it is followed by a consonant.

\[/və/\]

A.E. \(/və/\) corresponds closely with S.V. \(/və/\), which can also be followed by a consonant. This diphthong should not present any problems for speakers of S.V.

4.5 Postulated correspondence of consonants
Unlike the vowels of Vietnamese which have numerous variants, the consonants are much simpler (see fig.7). There is also greater agreement between the authors. In this case, there is only one phoneme, \(/k/\), in which the authors differ, and I have resolved the problem in the following way:

\[/k/\]

\(/k/\) In the case of this phoneme, Le hears three allophones and five diallophones whereas Nguyen hears five allophones (see p.36). However, I hear \(/k/\) as a separate allophone, meaning I hear a possible six variants.

Unlike the vowels in English which have relatively few variants, the consonants have numerous allophones. Added to this, English has a great variety of consonant clusters which do not exist in Vietnamese (see word lists, Appen.2), posing enormous problems for the learners.
4.4 Postulated correspondence of consonants

In contrasting figures 3 and 4 in order to predict problems of S.V. learners, it can clearly be seen where problems will occur with consonants that have no S.V. allophonic correspondence.

/p/

A.E. /p/ is plosive especially in initial position, unlike S.V. /p/ (an allophone of S.V. /b/) which only occurs initially in rare foreign words (such as ping-pong), or is unreleased in final position. This means learners could tend to either pronounce this phoneme without releasing it sufficiently, or pronounce it more like its S.V. phone /b/.

/b/

A.E. /b/ is like S.V. /b/ except in S.V. it occurs in initial position only, meaning that learners could have problems voicing this phoneme so that they pronounce it as /p/ in word medial or final position.

/t/

A.E. /t/ is plosive, especially in initial position, unlike S.V. /t/ which is unaspirated, meaning that learners could pronounce this phoneme without releasing it enough, making it difficult to hear, particularly in medial and final position.
<table>
<thead>
<tr>
<th></th>
<th>Bilabial</th>
<th>Labiodental</th>
<th>Dental</th>
<th>Alveolar</th>
<th>Post-alveolar</th>
<th>Palato-alveolar</th>
<th>Palatal</th>
<th>Velar</th>
<th>Glottal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plosive</td>
<td>P b [b]</td>
<td>[p]</td>
<td>[β]</td>
<td>[t]</td>
<td>[tʰ]</td>
<td>[kʰ]</td>
<td>[k]</td>
<td>[g]</td>
<td>[gʰ]</td>
</tr>
<tr>
<td>Fricative</td>
<td>f [f]</td>
<td>[v]</td>
<td>Ø [s]</td>
<td>θ [θ]</td>
<td>S [s]</td>
<td>z [z]</td>
<td>s [s]</td>
<td>[ʃ]</td>
<td>[h]</td>
</tr>
<tr>
<td>Affricate</td>
<td>[tʃ]</td>
<td>[dʒ]</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>j [j]</td>
<td></td>
</tr>
<tr>
<td>Semi-vocal</td>
<td>w [w]</td>
<td>[v]</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>j [j]</td>
<td></td>
</tr>
<tr>
<td>Nasal</td>
<td>m [m]</td>
<td>n [n]</td>
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<td>n [n]</td>
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<tr>
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<td></td>
<td></td>
<td>r [ɹ]</td>
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<td></td>
</tr>
</tbody>
</table>

**FIGURE 3. Australian English consonants and variants**
<table>
<thead>
<tr>
<th></th>
<th>Bilabial</th>
<th>Dental</th>
<th>Apical</th>
<th>Retroflex</th>
<th>Alveolar</th>
<th>Velar</th>
<th>Glottal</th>
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<tr>
<td>plain</td>
<td>p</td>
<td>t</td>
<td>th</td>
<td>c</td>
<td>k</td>
<td>l</td>
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<tr>
<td>Stops aspirated</td>
<td>b</td>
<td>th</td>
<td>d</td>
<td></td>
<td>k</td>
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<td>voiced</td>
<td>b</td>
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<td>s</td>
<td>s</td>
<td>x</td>
<td>h</td>
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<td>Fricatives</td>
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<td>voiced</td>
<td>v</td>
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<td>Nasal</td>
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<td>g</td>
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<td>Trill</td>
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<tr>
<td>Semi-vowels</td>
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<td></td>
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<td></td>
</tr>
</tbody>
</table>

**FIGURE 4. South Vietnamese consonants and variants (Le and Nguyen)**

/đ/

A.E. /đ/ is like S.V. /đ/ except in S.V. it occurs in initial position only, meaning that learners could have problems voicing this phoneme in word medial or final position.
/k/
A.E. /k/ can be released in all positions and is more fronted than S.V. /k/ which is unreleased in final position, meaning that learners may not release this phoneme sufficiently in initial position and substitute a S.V. allophone, or not release it at all in other positions.

/g/
A.E. /g/ has no correspondence with S.V., the closest phonemes being either /k/, or /ʃ/ which is fricative and pronounced in initial position only, meaning that learners may substitute one of these, or else not pronounce it at all, particularly in medial or final positions.

/tʃ/
A.E. /tʃ/ is similar to S.V. /c/ in initial position, but in final position, S.V. /c/ is unreleased, meaning that learners will probably release this consonant in initial position, and not release it in other positions.

/dʒ/
A.E. /dʒ/ has no correspondence with S.V., meaning that learners could substitute their nearest phoneme /c/, and voice it too softly.

/f/
A.E. /f/ occurs in all positions, whereas S.V. /f/ occurs in initial position only, meaning that learners could either
substitute S.V. /p/ which is also silent, or not pronounce it at all in other positions.

/v/
A.E. /v/ occurs in all positions, whereas S.V. /v/ occurs in initial position only, meaning that learners could either substitute S.V. /f/ and not voice this phoneme, or not pronounce it at all in other positions.

/ʌ/, /æ/
A.E. /ʌ/ and /æ/ have no correspondence with S.V., the closest phonemes being S.V. /t/, /tʰ/ and /d/, meaning that learners could substitute one of these sounds, or not pronounce them at all. Pronunciation of /ʌ/ will probably be extremely difficult for learners to master and first attempts may be heard as silent /ʌ/.

/s/
A.E. /s/ is less dental than S.V. /s/ and occurs in all positions, whereas in S.V. it occurs in initial position only, meaning that learners may tend to pronounce it as /ʃ/ or perhaps not pronounce it at all in medial or final positions. There may also be problems of incorrectly adding or omitting /s/ due to A.E. verb and plural endings.

/z/
A.E. /z/ has no correspondence with S.V. and will probably
be very difficult for learners to pronounce, meaning that learners will probably substitute S.V. /s/, or not pronounce it at all.

/ʃ/  
A.E. /ʃ/ is more rounded than S.V. /ʃ/ which occurs in initial position only, meaning that learners will probably pronounce it in initial position, but pronounce it very weakly like a soft /s/, or not at all, in other positions.

/ʒ/  
A.E. /ʒ/ has no correspondence with S.V., meaning that learners could either substitute their nearest phoneme /s/, or not pronounce it at all. It is also possible that this phoneme could be mistaken for other difficult to pronounce but more frequently used A.E. phonemes, /ʃdʒ/ or /z/.

/h/  
A.E. /h/ closely corresponds with S.V. /h/ which occurs in initial position only, meaning that this phoneme should not be difficult for learners.

/m/, /n/  
A.E. /m/ and /n/ correspond with S.V. in both sound and position, although S.V. uses more airflow through the nose than does A.E., meaning that it should not be difficult for learners.
/ŋ/
A.E. /ŋ/ is more velarised than S.V. /ŋ/. This phoneme occurs in final position in S.V. as it does in A.E., meaning that it should not be difficult for learners.

/l/
A.E. /l/ approximates S.V. /l/ in initial position, but is produced in a slightly different way and not released as in A.E., meaning that learners will tend to approximate this phoneme by substituting S.V. /v/, or not pronounce it at all, particularly in medial or final positions.

/r/
A.E. /r/ is produced without a trill, whereas S.V. /ɾ/ is produced with a trill or friction, in initial position only, meaning that learners will probably pronounce this phoneme as S.V. /ɾ/, or not pronounce it at all in medial or final positions.

/j/
A.E. /j/ is close to S.V. /j/, but does not correspond to S.V. allophone /t̮/ which is a high front fricative, meaning that learners should not have difficulties pronouncing this phoneme, but could mistake it for S.V. /t̮/ and pronouncing it accordingly.
/w/

A.E. /w/ corresponds closely with S.V. /w/, so should not cause problems to learners.
CHAPTER 5
ENGLISH PRONOUNCED BY SOUTH VIETNAMESE.

5.0 Introduction
The basis for this account of errors made by ten tertiary level S.V. speakers of English is a series of taped interviews and reading tests given before and following ten one hour pronunciation lessons.

Firstly subjects were given a guided interview, then word lists containing vowels and consonants were presented for them to read which were followed by a short reading passage (for reference data see appendix 2). The interviews, word lists and readings are used for listening analysis as follows:

a. Single vowels
   in words read in random order (so that subjects could concentrate on each word separately) as /ɔ:/ (in port),
   in reading numbers 1-20,
   in a short reading passage,
   in a 10-15 minute conversation.

b. Diphthongs
   using the same procedure as for vowels.

c. Single consonants
   in word lists read in initial, medial and final positions as /b/ (in bat, dabber, tab),
read in lists of clusters which occur in initial, medial and final positions as /bl/ (in black, sublet, able), in reading numbers 1-20, in a short reading passage, in a 10-15 minute conversation.

c. Consonant clusters

in word lists in initial, medial and final positions as /sp/ (in speak, aspire, gasp).

For ease of referring to the types of errors made by each subject, I have used the following code of errors in classes:

E.C.1 refers to complete omission of a sound. In the case of clusters, this could be a partial or complete omission of sounds as /ns/ in pronounce as [pronauəs] or /skt/ in frisked as [frit].

E.C.2 refers to unreleased sound.

E.C.3 refers to sounds resulting from the speaker wishing to pronounce the sound "correctly". This occurs when it is in a position that is unfamiliar and is combined with poor co-articulation, resulting in over-articulation as in laughed /lɑːft/ and badge /bædʒ/.

E.C.4 refers to close replacement sounds which have similar pronunciation, as in mail /meɪl/ where /e/ is replaced with /æ/ and /l/ is replaced with /v/. Other examples in consonants occur in /b/ which is confused with its S.V. allophone /p/ (as in bat /bæt/), in confusing
/dʒ/ with /tʃ/ (job /tʃɔb/) where only the unfamiliar voicing is different, or in the reverse "hyper-correct" replacement /tʃ/ (chat /dʃɔtʃ/), where /tʃ/ (a phoneme occurring only initially in S.V.) becomes /dʒ/ (a phoneme that does not occur in S.V.). In the case of clusters, this could be a partial or complete replacement as /nθ/ in tenth as /tentθ/ or /ʃr/ in ashram as /əʃərm/. E.C.5 refers to odd replacement sounds that do not seem to be consistently used by the speaker, probably caused by mistakes or slips of the tongue as /ɛ/ in can as /kɔn/, and especially in clusters as /spɔs/ in gasps as /gaːsts/. E.C.6 refers to errors caused by adding an extra phoneme where the meaning of the word is changed as in whisked as /wiskəd/ and too as /trə/. E.C.7 refers to errors caused by misinterpreted orthography as in mis-reading /ndʒd/ in lunged as /lʌŋgd/. E.C.8 refers to permutations that occur when sequences of sounds are altered as in /st/ in post as /pɔst/ or /ɔv/ in of as /vɔf/. Where this involves only consonants, listing will be under each sound involved. However, where vowels are involved with consonants, listings will be only under the consonants, as vowels are usually the nucleus of a syllable and one instinctively feels that it is the consonant that has been moved. E.C.9 occurs in clusters and refers to a combination of E.C.1 (omission) and E.C.4 (replacement).
E.C.10 occurs in clusters and refers to a combination of E.C.3 (over-articulation) and E.C.6 (added phoneme).
E.C.11 occurs in clusters and refers to a combination of E.C.1 (omission) and E.C.3 (over-articulation).
E.C.12 occurs in clusters and refers to a combination of E.C.3 (over-articulation) and E.C.4 (replacement).
E.C.13 occurs in clusters and refers to a combination of E.C.4 (replacement) and E.C.6 (added phoneme).
E.C.14 occurs in clusters and refers to a combination of E.C.8 (permutation) and E.C.1 (omission).
E.C.15 occurs in clusters and refers to a combination of E.C.8 (permutation) and E.C.4 (replacement).
E.C.16 occurs in clusters and refers to a combination of E.C.8 (permutation) and E.C.6 (extra phoneme).
E.C.17 occurs in clusters and refers to a combination of E.C.7 (misreading) and E.C.4 (replacement).

It must be admitted however, that it is sometimes difficult to distinguish between E.C.4 and E.C.5, and between E.C.6 and E.C.7, and from the viewpoint of the English listener there is little difference between them.

In the case of percentages, each kind of error in word lists, reading passages and numbers is calculated in word position to the nearest whole number, and results presented below. Overall percentages of errors are then calculated from word position percentages, showing results of first tests compared
to second tests. Gaining exact percentages from interviews and would be time consuming and hardly worthwhile so I have used a more general percentage reference for these. This percentage reference has also been used for the section summary as follows: 1-5%

5-10%

10-20%

20-30% etc.
5.1 Vowels

/i:/

Single vowels (1 medial example in beat):
E.C.4 (replacement) occurs 60% as /i/ in first test,
30% in second test.

Reading passages (4 medial, 7 final examples):
E.C.4 (replacement) occurs 18% as /i/ medially (as in meet
//mit/),
3% finally (in we /wi/) in first
test and
8% medially, in second test.

Numbers 1-20 (1 initial, 7 medial, 1 final example):
E.C.4 (replacement) occurs 37% as /i/ medially (as in thirteen
/θ3:tin/),
10% finally (three /θri/) in first
test and
30% medially,
10% finally, in second test.

Conversations:
E.C.4 (replacement) occurs 40-50% as /i/ medially (as in speak
/spik/) in first interview and
30-40% medially, in second interview.
Summary:
/i:/ is replaced with shortened S.V. /i/ as in meet 40-50% in medial position, but only 5-10% in we in final position. Subjects showed errors of 23% in first test and 14% in second test, an improvement of 9 percentage points, or 39%.

/ɪ/

Single vowels (1 medial example in bit):
No errors are recorded in bit.

Reading passages (6 initial, 12 medial, 3 final examples):
E.C.1 (omission) occurs 4% medially (as in physical /ˈfɪzɪkəl/) in first test,
1% medially, in second test.

Numbers 1-20 (3 medial examples):
No errors recorded.

Conversations:
E.C.1 (omission) occurs 1-5% medially (in possible /ˈpɑːsəbl/) in both interviews.
E.C.7 (misreading) occurs 1-5% as /i:/ medially (in system /ˈsɪstəm/) in second interview.

Summary:
/i:/ is omitted 1-5% in medial position as in physical and replaced with /i:/ 1-5% as in system, as misunderstood
orthography. Subjects showed 1% of errors in first test and none in second test, an improvement of 1 percentage point, or 100%.

/e/

**Single vowels** (1 medial example in *bet*):
E.C.4 (replacement) occurs 10% as /3/ in both tests and 10% as /1/ in second test.

**Reading passages** (12 medial examples):
No errors recorded.

**Numbers 1-20** (9 medial examples):
E.C.7 (misreading) occurs 1% as /1/ (in *eleven* /ˈɛlɪvən/) in both tests.

**Conversations:**
E.C.1 (omission) occurs 1-5% initially (in *economics* /ˌɛkəˈnɒmɪks/) in first interview.

**Summary:**
/el/ is omitted 1-5% in initial position in *economics*, and misread as /1/ 1-5% in medial position in *eleven*. Subjects showed 4% of errors in first test and 7% in second test, a regression of 3 percentage points, or 75%.
/ɛ/

Single vowels (1 medial example in *bat*):
No errors recorded.

Reading passages (4 initial, 8 medial examples):
E.C.4 (replacement) occurs 5% as S.V. */ʌ/* medially (in *factors*
/*fəktərz*/) in first test and 3% in second test.

Conversations:
E.C.4 (replacement) occurs 1-5% as S.V. */ɛ/* medially (as in *can*
/*kæn*/) in first interview.
E.C.5 (replacement) occurs 1-5% as */e/* initially (in *accents*
/*æksents*/) in first interview.

Summary:
/ɛ/ is replaced 1-5% with S.V. */ʌ/* as in *factors* and S.V. */ɛ/* as in *can* in medial position. It is also replaced 1-5% with */e/* in *accents* in initial position. Subjects showed 2% of errors in first test and 1% in second test, an improvement of 1 percentage point, or 50%.

/a:/

Single vowels (1 medial example in *part*):
No errors recorded.
Reading passages (3 medial examples).
No errors recorded.

Conversations:
No errors recorded.

Summary:
As no errors were recorded in the tests, I conclude that this vowel is not a problem for S.V. speakers.

/a/

Single vowels (1 medial example in but):
No errors recorded.

Reading passages (3 medial examples):
No errors recorded.

Conversations:
F.C.1 (omission) occurs 1-5% initially (in accounting /ˈkaʊtɪŋ/) in first interview.
E.C.4 (replacement) occurs 5-10% medially as /ɜ:/ (in study /ˈstʌdi/, /e/ (in just /ˈjest/), /ə/ (in subjects /ˈsʌbdʒɪkts/), /ɜ/ (in sometime /ˈsʌmtaɪm/), /a:/ (in once /ˈwʌns/) in first interview and
E.C.7 (misreading) occurs 1-5% as /ɔ/ (in tongue /ˈtʌŋ/)
Summary:
/a/ is omitted 1-5% in accounting and replaced 5-10% with /ə:/ in study, /e/ in just, /ʌ/ in sometimes and /a:/ in once in medial position. It is also replaced with /ɔ/ 1-5% as in tongue due to misunderstood orthography. Subjects showed no errors in tests.

/ʊ/
Single vowels (1 initial example in apart):
E.C.7 (misreading) occurs 10% as /eə/ (in apart /eəpa:t/) in second test.

Single consonants:
In the approxilict an /ʊ/ sometimes appears at the end of a word as in thing (see p.58).
E.C.3 (over-articulation) occurs 10% as /ʊ/ finally (in thing /θɪŋgɪŋ/) in first test.

Consonant clusters:
E.C.7 (misreading) occurs as /ʊ/ medially in minced (/mɪnsəz/), loved (/lʌvət/), finally in trudged (/trʌdʒdʒd/)
in first test and in bathes (/beɪθz/) in both tests.
Reading passages (4 initial, 10 medial, 1 final example):
E.C.3 (over-articulation) occurs 1% as /ʒ/ finally (in friends
[frenzə]) in first test.

Numbers 1-20:
E.C.7 (over-articulation) occurs 10% as /ʒ/ finally (in five
[faɪv]) in first test.

Conversations:
E.C.1 (omission) occurs 1-5% initially (in address [dres])
interview and
1-5% medially (in confident [kɒnfɪdənt])
in second interview.
E.C.3 (over-articulation) occurs 1-5% as /ʒ/ finally (in tongue
[taŋgə]) in first interview.
E.C.4 (replacement) occurs 1-5% as /ɪ/ initially (as in express
[ɪksprɪs]) in second interview

Summary:
/ʒ/ is replaced 1-5% with /eɪ/ in apart and omitted 1-5% in
initial and medial positions in address and confident. It
is replaced 1-5% in initial position with /ɪ/ in express in
conversations. It is also an extra sound 5-10% in tests and
conversations due to over-articulated and misread orthography
as in tongue. Subjects showed 5% of errors in first test and
3% in second test, an improvement of 2 percentage points,
or 40%.

73
Single vowels (1 medial example in bird):
No errors recorded.

Reading passages (2 medial examples):
No errors recorded.

Numbers 1-20 (1 medial example):
No errors recorded.

Conversations:
E.C.1 (omission) occurs 1-5% medially (in difference /difensrə/) in first interview.
1-5% finally (in after /aːftə/) in second interview.

E.C.4 (replacement) occurs 1-5% as /ɔ/ medially (as in work /wɜːk/) in both interviews.
1-5% as s.v. /ɔ/ (in working /wɜːkɪŋ/) in first interview.
1-5% as /a/ medially (as in first /fast/) in second interview.

E.C.5 (replacement) occurs 1-5% as /u/ medially (in word /wɜːd/) in first interview.

Summary:
/ɔ:/ has 1-5% of omissions as in difference and 1-5% of replacements as /ɔ/ in work, /u/ in word, /a/ in first and

74
S.V. /ɔ/ in working in medial position in conversations. Subjects showed no errors in tests.

/ɔ/

Single vowels (1 medial example in pot):
No errors recorded.

Reading passages (6 initial, 4 medial examples):
No errors recorded.

Conversations:
E.C.4 (replacement) occurs 1-5% as /ɔ/ medially (in electronics /ˈɛlek-trɪnɪks/) in first interview.
E.C.6 (extra phoneme) occurs 1-5% as /ɔ/ (in first /fɔst/) in first interview.

Summary:
/ɔ/ is not difficult for S.V. to pronounce and is replaced once with /ə/ in electronics and is an extra phoneme 1-5% in first. Subjects showed no errors in tests.

/ɔ: /

Single vowels (1 medial example in port):
E.C.4 (replacement) occurs 20% as /ɔ/ (in port /pɔt/) in first test and 10% in second test.
Reading passages (4 medial, 2 final examples):
E.C.4 (replacement) occurs 13% as /ɹ/ medially (in because /bɪkəs/) and
8% medially, in second test.

Numbers 1-20 (1 medial, 1 final example):
No errors recorded.

Conversations:
E.C.4 (replacement) occurs 5-10% medially as /ɹ/ (in because /bɪkəs/),
1-5% initially (in order /ɔdʒ/) in first interview and
1-5% initially, medially and finally (in before /bɪʃ/) in second interview.
1-5% as /ɹ/ initially (in order /ɔdʒ/).

Summary:
/ɹ:/ is replaced 5-10% with /ɹ/ as in order and because, and
1-5% with /ɹ/ as in order in all positions. Subjects showed
6% of errors in first test and 3% in second test, an improvement
of 3 percentage points, or 50%.
/u/

**Single vowels** (1 medial example in *put*):

No errors recorded.

**Reading passages** (1 medial example):

E.C.4 (replacement) occurs 10% as /ɔ/ (in *handful* /ˈhæntfɔːl/) in both tests.

**Conversations**:

No errors recorded.

**Summary**:

/ʊ/ is not difficult for S.V. to pronounce. It is replaced by one subject only once, with /ɔ/ in *handful* in both tests. Subjects showed 5% of errors in both tests, showing no improvement.

/ʉː/

**Single vowels** (1 medial example in *boot*):

E.C.4 (replacement) occurs 30% as /uː/ (in *boot* /bʊt/) in first test and 10% in second test.

**Reading passages** (2 medial examples):

No errors recorded.
Conversations:
E.C.4 (replacement) occurs 1-5% as /u/ medially (in Droop /drup/) in first interview.

Summary:
/u:/ is replaced with /u/ 10-15% as in Droop in medial position only. Subjects showed 15% of errors in first test and 5% in second test, an improvement of 10 percentage points, or 67%.

5.2 Diphthongs

/aɪ/
Diphthongs (1 final example in buy):
No errors recorded.

Reading passages (4 medial examples):
E.C.4 (replacement) occurs 3% as /aː/ medially (as in prime /praːm/) in first test and 8% in second test.
E.C.7 (misreading) occurs 3% as /ɪ/ medially (in prime /prɪm/) in both tests.

Numbers 1-20 (3 medial examples):
No errors recorded.
Conversations:

E.C.4 (replacement) occurs 5-10\% as /a:/ medially (as in time /taːm/) in both interviews.

E.C.5 (replacement) occurs 1-5\% medially as /a_2/ (in ninety /na_2tiː/) /a_3/ (in time /ta_3m/) and /ɔI/ as in broad A.E. which I see as inappropriate for educated A.E. (in fine /fain/) in first interview.

Summary:

/ai/ is replaced 5-10\% with /a:/ as in time and also replaced 1-5\% with /a_2/ in ninety, /a_3/ in time and broad A.E. /ɔI/ in fine. It is misread 1-5\% as /I/ in prime. Subjects showed 1\% of errors in first test and 2\% in second test, an improvement of 2 percentage points or 50\%.

/el/

Diphthongs (1 final example in bay):

E.C.4 (replacement) occurs 10\% as S.V. /aj/(in boy /baj/) in first test.

Reading passages (2 initial, 7 medial, 1 final example):

E.C.4 (replacement) occurs 31\% as /ɛ/ medially (as in make /mɛk/), 10\% finally (in may /mɛ/) 5\% initially (as in age /eɪdʒ/)
in first test and
24% medially,
10% initially in second test.
11% as /ə/ and /ɔ/ medially (as in acquainted /əkwɔnted/ and take /tɔ/) in both tests.
5% as /ʌ/ medially (in acquainted /əkwɔnted/) in both tests.
3% as /e/ medially (as in take /tɛ/) in both tests.
E.C.5 (replacement) occurs 10% as S.V./əj/, /ɛj/ and /əj/ finally
(in may /mej/, /mɛj/ and /mej/) in first test.
E.C.6 (extra phoneme) occurs 1% finally as /əj/ (in difference /difensɛr/) in first test.

Numbers 1-20 (2 initial examples):
E.C.4 (replacement) occurs 5% as /ɛ/ (as in eighteen /ˌeɪtiːn/) in first test and
10% in second test.
5% as /ə/ (in eighteen /əˌtiːn/) in both tests.

Conversations:
E.C.4 (replacement) occurs 10-20% as /ɛ/ medially (as in take /tɛk/) in first interview and
5-10% initially (as in age /ɛt/) and
medially in second interview. 5-10% as /e/ medially (as in complain /'kɒmplɛn/) in both interviews.

Summary:
/eɪ/ is replaced with /ɛ/ 20-30% in initial and medial positions as in make, 5-10% in initial and final positions as in age and may and 1-5% odd replacements of /e/ and /ə/ in take, /a/ in aquainted, and with S.V. /æj/, /ɛə/, S.V. /ɛj/ in may. It is also replaced 1-5% with /æə/ in eight, /aːz/ in say and is an added diphthong in difference. Subjects showed 21% of errors in first test and 12% in second test, an improvement of 5 percentage points or 43%.

/DʒI/ Diphthongs (1 example in boy):
No errors recorded.

Conversations:
No errors recorded.

Summary:
/DʒI/ shows no errors in conversations and I conclude that this diphthong is not a problem for S.V. speakers. Subjects showed no errors in tests.
Diphthongs (1 final example in *bough*):
E.C.4 (replacement) occurs 20% as /ɔː/, /ɔ/, /ɔː/ (in *bough*
/ɔː/, /ɔ/ and /ɔː/) in both tests.
E.C.7 (misreading) occurs 10% as /əʊ/ (in *bough* /bɒʊ/) in both tests.

Reading passages (3 medial examples):
E.C.7 (misreading) occurs 10% as /əʊ/ (in *account* /əˈkaʊnt/) in first test and 3% in second test.

Conversations:
E.C.5 (replacement) occurs 1-5% as /a:/ finally (in *now* /na:/) in second interview.

Summary:
/au/ is replaced 5-10% with /əʊ/ as in *account* in medial and final positions. It is also replaced 10-15% in final position in *bough* with /ɔː/, /ɔ/ and /ɔː/. Subjects showed 10% of errors in first test and 9% in second test, an improvement of 1 percentage point or 10%.

Diphthongs (1 final example in *bow*):
No errors recorded.
Reading passages (1 initial, 4 medial, 1 final example):
E.C.7 (misreading) occurs 30% as /ɔ/ initially (in only /'ɔnli:/),
10% medially (as in don't /dɒnt/) in first test and
3% medially, in second test.
10% as broad A.E. /au/ finally
(in although /'ɔ:lhəʊ/; in first test.

Conversations:
E.C.4 (replacement) occurs 5-10% as /ɔ/ initially and medially
(as in phone /fɔn/) in both interviews.
1-5% as /au/ medially (in slowly
/slaʊli:/) in both interviews.
E.C.5 (replacement) occurs 1-5% as S.V. /ə/ medially (in hope
/hoʊp/) in first interview.

Summary:
/au/ is replaced 5-10% with /ɔ/ in initial and medial positions
as in only and don't, 1-5% with S.V. /ə/ in hope and /au/
as in although which is correct for broad A.E. but is
inappropriate for educated A.E. Subjects showed 15% of errors
in first test and 1% in second test, an improvement of 14
percentage points or 93%.
/ɪə/

Diphthongs (1 final example in beer):
No errors recorded.

Reading passages (1 medial example):
No errors recorded.

Conversations:
E.C.3 (replacement) occurs 1-5% as /ɜ/ medially (in Australian /ɹələŋ/) in both interviews.
1-5% as /ɪ/ (in deal /dɪl/) in both interviews.

Summary:
/ɪə/ is not a problem for S.V. speakers and is replaced only 1-5% with /ɜ/ in Australian and /ɪ/ as in deal in conversations. Subjects showed no errors in tests.

/ɛə/

Diphthongs (1 final example in pair):
No errors recorded.

Conversations:
No errors recorded.

Summary:
This phoneme is not difficult for S.V. speakers and there
were no errors in conversations. There were no errors in tests.

/ʊə/

Diphthongs (1 final example in poor):
No errors recorded.

Reading passages (1 final example):
No errors recorded.

Numbers 1-20 (1 medial, 1 final example):
No errors recorded.

Conversations:
No errors recorded.

Summary:
/ʊə/ is not a problem for S.V. speakers. There are no errors in conversations. Subjects showed no errors in tests.
5.3 Consonants

/p/

Single consonants (3 examples in pat, dapper, cap):
E.C.3 (replacement) occurs 7% as /b/ medially (in dapper and finally in cap) in first test.

Consonant clusters (2 initial, 21 medial 1 final example):
E.C.1 (omission) occurs 3% medially (in lumps /lums/) in first test and
1% medially, in second test.
E.C.4 (replacement) occurs 20% as /b/ initially (as in prove /bru:v/),
1% medially (as in apple /æbə/) in first test and
5% initially, in second test.
2% as /t/ medially (as in gasps /gasps/) and
1% as /f/ medially (in optics /oftis/) in first test.
E.C.6 (extra phoneme) occurs 1% as /p/ medially (in lisps /lips/) and
finally (in gasped /gæsp/) in first test.
E.C.8 (permutation) occurs 2% (in gasp as /geps/ and /geps/) and in gasped as /gæps/ and /geps/) in both tests.
Reading passages (7 initial, 7 medial examples):

E.C.4 (replacement) occurs 7% as /b/ initially (as in part /ba:t/) and
4% as /b/ medially (as in people /bi:bʊ/) in first test.

Conversations:
E.C.4 (replacement) occurs 10-20% as /b/ initially and medially
(as in people /bɪbʊ/) in first interview and
1-5% medially, in second interview.

Summary:
As /p/ is an allophone of /b/ in S.V., it is replaced with
/b/ 5-10% in initial and medial positions as in people. I
perceive the 1-5% omissions as in lumps or replacements of
/t/ as in reading gasps and /f/ in optics as slips of the
tongue. It has 1-5% of extra phonemes as in gasped. Subjects
showed errors of 7% in first test and 1% in second test,
an improvement of 3 percentage points or 86%.

/b/

Single consonants (3 examples in bat, dabber, tab):
E.C.3 (replacement) occurs 20% as /p/ finally (in tab /tæp/) and
10% medially (in dapper /dæp3:/)
in first test.
Consonant clusters (3 initial, 8 medial examples):

E.C.1 (omission) occurs 3% medially (in abduct /ədʌkt/) in first test.

E.C.4 (replacement) occurs 3% as /p/ initially (in break /bræk/) in first test,
7% in second test and
33% medially (as in grabbed /ɡɹæpt/) in both tests.

E.C.6 (extra phoneme) occurs 1% as /b/ initially (in lisps /lɪps/) in first test.

E.C.8 (permutation) occurs 1% (in absolve as /ˈbaːsəlv/) in first test.

Reading passages (2 initial, 1 medial example):

No errors recorded.

Conversations:

E.C.1 (omission) occurs 5-10% medially (as in number /ˈnʌmbər/) and
1-5% finally (as in suburb /ˈsʌbɜːr/) in first interview.

E.C.4 (replacement) occurs 1-5% as /p/ in all positions (as
in basic /ˈbæsɪk/, subjects /ˈsʌbdʒektz/ and job /ʃɔp/) in both interviews.

Summary:

/b/ is mistaken for its S.V. allophone /p/ 10-15% in all
positions as in break, subjects and job, more so in clusters. It is omitted as in number and suburb 1-5% in medial and final positions. Subjects showed errors of 12% in first test and 4% in second test, an improvement of 8 percentage points or 67%.

/t/

Single consonants (3 examples in tab, fatter, pat):

E.C.4 (replacement) occurs 20% as /d/ initially (in tab /dæb/) in first test and 10% medially (in fatter /fædʒ/) in both tests.

E.C.6 (extra phoneme) occurs 10% as /t/ medially (in fisher /fɪʃə/) and 10% medially (in fizz /fɪts/) in first test.

Consonant clusters (3 initial, 21 medial, 19 final examples):

E.C.1 (omission) occurs 21% medially (as in facts /fæks/) and 36% finally (as in minced /mɪnsed/) in first test and 8% medially, 11% finally, in second test.

1% finally (in triumphed /traɪəmfr/) in first test.

E.C.3 (over-articulation) occurs 2% as /tʃ/ finally (as in sulked /sʌltʃ/) in first test.
1% as /ʔt/ finally (in pitched /pɪtʃt/) and /dʔ/ (as in whisked /wɪskdʔ/) in first test.

E.C.4 (replacement) occurs 5% as /s/ finally (as in sulked /sʌks/) in first test and 3% in second test.

3% as /d/ initially (in trick /drɪk/) and 1% medially (as in pointed /pɔidʔ/) in first test.

E.C.5 (replacement) occurs 1% as /k/ medially (in sits /sɪks/) and 1% as /z/ finally (in minced /mɪnsz/) in first test.

1% as /g/ medially (in atwirl /ægwɪl/) and 1% as /ʒ/ and /z/ finally (in minced /mɪnsz/) in second test.

E.C.6 (extra phoneme) occurs 1% as /t/ medially (in tasks /təskts/) in both tests.

1% finally (in menthol /mentɔl/), 1% finally (in helps /hɛpsət/) and 1% finally (in triumphs /traɪmfaʊt/) in first test.

E.C.8 (permutation) occurs 1% medially (as /pɛstɪ in patsy) in first test and
1% medially (as /fɛksts/ in facts and /pɛstʃ/ in patsy) in second test.
1% finally (as /ɡepstʃ/ in gasped and /bɛrstʃ/ in bathes) in first test and
1% finally (as /kəntɛktstʃ/ in contacts) in second test.

**Reading passages** (2 initial, 11 medial, 7 final examples):
E.C.1 (omission) occurs 8% finally (as in difficult (/dɪfɪkjuː/) in both tests.
E.C.3 (over-articulation) occurs 1% medially and finally (in attractiveness (/ətræktɪvəs/) and marked (/maːktʃ/) in first test.
E.C.4 (replacement) occurs 1% as /d/ medially (as in better (/bedər/) and
3% finally (as in it (/ɪt/) in both tests.
E.C.6 (extra phoneme) occurs 1% as /t/ finally (in difference (/ˈdɪfrɛnsʃ/) in first test.

**Numbers 1-20** (4 initial, 8 medial, 1 final example):
E.C.4 (replacement) occurs 14% as /d/ medially (in twenty (/ˈtwɛndiːʃ/) in first test and
3% as /tʃ/ initially (in twelve (/ˈtwɛlv/) in second test.
Conversations:

E.C.1 (omission) occurs 5-10% medially (as in currently \karenliː/),
20-30% finally (as in right /raɪ/) in first interview and
10-20% finally, in second interview.

E.C.4 (replacement) occurs 5-10% as /d/ medially and finally
(as in title /taɪdʒ/ and forget /fɔːged/) in both interviews.
1-5% as /s/ finally, in both interviews.
1-5% as /k/ and S.V. /k-/ medially and finally (as in separately
/ˈseprək-liː/ and bit /bɪk/) in both interviews.

Summary:

/t/ is not difficult to pronounce in initial position, but is omitted as in right 10-15% or replaced with /d/ as in title 5-10% in other positions. It is replaced with /s/ 1-5% in final position in not and banked and replaced 1-5% with odd phonemes such as /k/, /k-/ separately, /p/ gasped, /ɡ/ atwirl, /θ/ minced, /z/ minced and /ðt/ in pitched. It has 1-5% over-articulations as /θz/ in minced, /dɡ/ in whisked and is added to other phonemes 1-5% as in fisher and difference. /t/ also has 1-5% of permutations in clusters as in bathes.
Subjects showed errors of 14% in first test and 5% in second test, an improvement of 9 percentage points or 64%.

/d/

**Single consonants** (3 examples in dab, adder, pad):

E.C.2 (unreleased) occurs 10% medially (in adder /d-3/) in first test.

E.C.4 (replacement) occurs 70% as /t/ finally (in pad /p3t/) in first test and 80% in second test.

10% as /p/ finally (in pad /p3p/) in first test.

**Consonant clusters** (1 initial, 5 medial, 14 final examples):

E.C.1 (omission) occurs 10% initially (in drink /drιŋk/) and 12% medially (as in adrift /drιft/) in first test, 8% in second test and 19% finally in (dodged /d3dɛ∫/) in first test, 9% in second test.

E.C.3 (over-articulation) occurs 4% as /d3/ finally (in loved /lɛvdɛ∫/) and /d/ (in grabbed /grɛp3d/) in first test and 2% as /d3/ in second test.

E.C.4 (replacement) occurs 50% as /t/ initially (as in drink /drιŋk/) in both tests and
22% medially (as in trudged /trudʒt/) in first test,
18% in second test and
28% finally (in grabbed /ɡræpt/) in first test and
30% in second test.
1% as /f/ finally (in filmed /
/ɪrɪm/) in both tests.

Reading passages (3 initial, 5 medial, 4 final examples):
E.C.1 (omission) occurs 76% medially (as in friends /frɛns/),
48% finally (as in understand /
/ʌnˈstænd/) in first test and
28% medially,
30% finally, in second test.
E.C.4 (replacement) occurs 12% as /t/ medially (as in handful /
/hæntfʌl/),
20% finally (as in background /
/bækgrʌnd/) in first test and
10% medially and finally in second test.

Conversations:
E.C.1 (omission) occurs 30-40% medially and finally (as in words /
/ˈwɜːs/ and hard /
/haːd/) in both interviews.
E.C.4 (replacement) occurs 5-10% as /t/ in all positions (as
in Droop /truːp/, reading /rɪtɪŋ/ and find /faɪnt/ in both interviews.

Summary:

/d/ is replaced 1-5% with /t/ as in difficult in initial position and 10-20% in other positions. It is omitted 1-5% in initial position and 10-20% in other positions as in postcode, also having 1-5% odd extra phonemes as /dɔ/ in loved and /ɔd/ which I see as mistakes caused by over-articulating the final sound. It is interesting to note that /d/ is sometimes omitted before /r/ which is then flapped as in S.V. /ɜː/ adrift.

Replacements of /f/ filmed and /t/ mainly occur in final position. Subjects showed errors of 43% in first test and 31% in second test, showing an improvement of 12 percentage points or 28%.

/k/

Single consonants (3 examples in cat, backer, sack):

E.C.4 (replacement) occurs 10% as /g/ medially (in backer /bəkər/) in first test.

E.C.6 (extra phoneme) occurs 10% as /k/ medially and finally (in fisher /ˈfɪʃər/, fish /fɪʃ/ and thing /θɪŋ/) in first test.

10% medially (in hiss /hɪs/) and 10% finally (in thing /θɪŋ/) in first test.
Consonant clusters (3 initial, 28 medial, 1 final example):

E.C.1 (omission) occurs 6% medially (as in coaxed /koʊst/) 10% finally, in first test and 3% in second test.

E.C.4 (replacement) occurs 13% as /g/ initially (as in quick /kwɪk/) in both tests and 2% medially (in enclose /ɪŋˈloʊs/) in both tests.

E.C.5 (replacement) occurs 1% as S.V. /ɛ/ medially (in enclose /ɪŋˈloʊs/) and /t/ (in masks /maːst/) in first test.

E.C.6 (added phoneme) occurs 1% as /k/ medially (in shriek /ˈskɹik/) in first test.

E.C.8 (permutation) occurs 1% (as /wɪkst/ in whisked) in first test.

Reading passages (1 initial, 10 medial, 4 final examples):

E.C.1 (omission) occurs 1% medially (as in factors /fæktərz/), 13% finally (as in take /tæk/) in first test and 5% in second test.

E.C.2 (unreleased) occurs 8% as S.V. /k-/ finally (as in like /laɪk-/) in first test.

E.C.4 (replacement) occurs 40% as /g/ initially (as in clearly /ˈklɪəli/) in first test and 20% in second test.
Numbers 1-20 (2 medial examples):

E.C.1 (omission) occurs 5% medially (in sixteen /ˈsɪstiːn/) in first test.

E.C.2 (unreleased) occurs 5% as S.V. /k-/ medially (in six /ˈsɪk-/) in first test.

Conversations:

E.C.1 (omission) occurs 5-10% medially and finally (as in sixty /ˈsɪstiː/ and think /θiŋ/) in first interview and 1-5% in second interview.

E.C.2 (unreleased) occurs 1-5% as S.V. /k-/ medially (as in Footscray /ˈfʊsk rw/), but more so finally (as in think /θiŋk-/) in both interviews.

E.C.4 (replacement) occurs 1-5% as /g/ in all positions (as in class /klæs/, accents /ˈæksɛnts/ and like /laɪg/) in both interviews.

E.C.5 (replacement) occurs 1-5% as /j/ medially (in exact /ɪkˈsaːkt/) and /s/ (in talk /tɒkl/) in first interview.

E.C.6 (extra phoneme) occurs 1-5% as /k/ medially (in fisher /ˈfɪskər/, English /ˈɛŋklɪŋ/) and finally (in tongue /tɒŋk/) in first interview.
Summary:
/k/ is omitted 1-5% in medial and final position as in like and replaced with /g/ 1-5% mainly in initial position as in question, and in medial position. It is replaced 1-5% by S.V. /k-/ as in six, S.V. /ŋ/ in enclose, /j/ in exact and /s/ in talk. It also has 1-5% extra phonemes as /k/ in fisher and tongue. Subjects showed errors of 14% in first test and 5% in second test, an improvement of 9 percentage points or 64%.

/g/

Single consonants (3 examples in gag, maggot, gag):
E.C.1 (omission) occurs 10% finally (in gag /gæɡ/) in both tests.
E.C.4 (replacement) occurs 60% as /k/ medially (in maggot /mækt/) in first test and 10% in second test.
E.C.7 (misreading) occurs 50% as /g/ (in singer /sʌŋ/)

Consonant clusters (2 initial, 3 medial, 1 final example):
E.C.2 (unreleased) occurs 5% as S.V. /k-/ medially (as in aglow /æklou/) in first test and 2% in second test.
E.C.4 (replacement) /k/ occurs 35% initially (as in gloss /klɔs/).
23% medially (as in aglow /əˈkloʊ/) in first test and
20% initially,
7% medially, in second test.
5% as S.V. /ʃ/ initially (in
grey /ˈɡreɪ/),
7% medially (as agree /ə ˈriː/) in first test and
5% initially,
7% medially, in second test.
E.C.7 (misreading) occurs 1% medially (in lunged /ˈlʌŋgd/) in first test.

Reading passages (3 initial, 1 medial example):
E.C.4 (replacement) occurs 10% as S.V. /ʃ/ initially (in granted
ˈɡrɛntɪd/) in first test.

Conversations:
E.C.4 (replacement) occurs 1-5% as /k/ in all positions (in
great /ˈkreɪt/, biggest /ˈbɪgest/ and big /bɪg/) in both interviews.
1-5% as S.V./ʃ/ and S.V. /k-/ medially (in program
ˈprɔʊrɛmz/ and because
ˈbrɪk-ɪz/) in first interview.
E.C.6 (extra phoneme) occurs 1-5% as /g/ finally (in tongue
Summary:

/g/ is replaced 10-20% with /k/ as in grey in all positions, particularly in clusters. It is omitted in final position as in gag or replaced with S.V. /ð/ as in grey in initial and medial positions 1-5%. It is also replaced 1-5% with S.V. /k-/ as in agree in clusters and added to another phoneme as in tongue which I see as a misreading. Subjects showed errors of 26% in first test and 12% in second test, an improvement of 14 percentage points or 54%.

/tʃ/

Single consonants (3 examples in chat, patchy, match):
E.C.4 (replacement) occurs 10% as /t/ finally (in match /mætʃ/) in both tests.
10% as /dʒ/ initially (in chat /dʒætʃ/) in first test and
20% in second test.

Consonant clusters (4 medial examples):
E.C.4 (replacement) occurs 3% as /t/ medially (in watches /waːts/) in both tests.
3% as /s/ medially (in pitched /ˈpɪstʃ/) in both tests.
3% as /ð/ medially (in watched /ˈwaːtʃtʃ/) in first test.
\[ \text{wot}/ \) in both tests.

E.C.5 (replacement) occurs 3% as /p/ (medially in punched
\[ \text{pam}/ \) in second test.

Conversations:

E.C.4 (replacement) occurs 1-5% as /ʃ/ and /s/ finally (in
much \[ \text{ma}/ \) and \[ \text{mas}/ \) in both
interviews.

Summary:

/tʃ/ shows errors of 1-5%, occurring in all positions. It is replaced 1-5% with /dʒ/ in chat, /t/ in watches, /s/ pitched, /p/ punched, /ʃ/ much and /t/ in actually. There is no /tʃ/ included in the reading test. Subjects showed errors of 8% in first test and 12% in second test, a regression of 4 percentage points or 33%.

/dʒ/

Single consonants (3 examples in jag, magic, badge):

E.C.3 (over-articulation) occurs 10% finally as /dʒ/ (in badge
as \[ \text{bedʒ}/ \) in both tests and
10% as /tʃ/ (badge \[ \text{batʃ}/ \)
in first test.

E.C.4 (replacement) occurs 40% as /tʃ/ finally (in badge
\[ \text{betʃ}/ \) in both tests and
10% initially (in jag \[ \text{tʃ}g/ \)
in first test.
30% as /ʃ/ medially (in magic /mæɡɪk/),
10% initially and finally (in jag /dʒæg/ and badge /bædʒ/) in first test and
20% medially, in second test.
10% finally as /dʒ/ (in badge /bædʒ/) in second test.

Consonant clusters (5 medial, 1 final example):
E.C.1 (omission) occurs 6% medially (as in lungen /lʌŋg/) in first test and
4% in second test.
E.C.4 (replacement) occurs 40% as /tʃ/ medially (as in trugged /trʌgdʒ/) in first test and
26% in second test.
10% finally (in change /tʃæntʃ/) in first test.
30% as /k/ and /ɡ/ medially (as in trugged /d्रʌktʃ/ and /dɾægtʃ/) in first test and
14% medially, in second test.
2% as /dʒ/ medially (in trugged /traitsdʒ/) in both tests.
E.C.5 (replacement) occurs 2% as /tʃ/ medially (in trugged /trʌgdʒ/) in first test.
2% as /s/ medially (in lungen /lʌŋg/)
in both tests.

E.C.7 (misreading) occurs 5% as /g/ medially (in lunged /laŋgd/) in both tests.

Reading passages (1 medial, 3 final examples):

E.C.1 (omission) occurs 3% finally (in large /laː/) in first test.

E.C.4 (replacement) occurs 60% as /tʃ/ finally (as in large /laːtʃ/) in first test and 40% in second test.

5% as /ʒ/ medially (in intelligence /ˈintɪlɪdʒəns/) in first test, 10% in second test and 10% finally (in large /laːʒ/) in second test.

E.C.5 (replacement) occurs 17% as /z/, /ʃ/ and /t/ finally (in age /eɪʒ/, /eɪʃ/ and /eɪt/) in first test and 7% as /z/ in second test.

E.C.6 (extra phoneme) occurs 2% as /dʒ/ initially (in usually /ˈdʒuzuʒəl/) in first test.

E.C.7 (misreading) occurs 10% as /dʒ/ finally (in age /dʒə/) in first test.

Conversations:

E.C.4 (replacement) occurs 10-20% as /tʃ/ in all positions (as in jcb /tʃəp/, enjoy /ˈenəʊ/)
and knowledge (/nələ/) in both interviews.

1-5% as /ʒ/ initially (in job (/ʃəb/)
in first interview only.

5-10% as /t/ finally (in page (/pət/),
/k-/ (college (/kələɡ-/) and
/ʒ/ (language (/ˈlæŋwə/) in both interviews.

Summary:

/dʒ/ is replaced 30-40% by the hyper-correction /tʃ/ as in job and 10-20% by /ʒ/ as in magic in all positions. It has 5-10% odd replacements as /s/ in lunged, /k/ and /g/, /t/ as in trudged, particularly in clusters. It is also replaced 1-5% with /ʃ/ /ʃ/ as in age, is over-articulated 1-5% as in badge and is an extra phoneme 1-5% as in usually. Subjects showed 40% of errors in first test and 22% in second test, an improvement of 18 percentage points or 45%.

/f/  

Single consonants (3 examples in fig, jiffy, tiff):

No errors recorded.

Consonant clusters (10 medial examples):

E.C.1 (omission) occurs 8% (as in coughs (/kɒʃ/) in first test and 5% in second test.

E.C.3 (over-articulation) occurs 1% as /v/ (as in laughs (/lævz/)

104
in second test.

E.C.4 (replacement) occurs 7% as /p/ (as in *triumphs* /trɪəmpz/) in first test and 4% in second test.

Reading passages (8 initial, 4 medial, 2 final examples):
No errors recorded.

Numbers 1-20 (3 initial, 1 medial example):
E.C.1 (omission) occurs 20% medially (in *fifteen* /ˈfɪtiːn/) in first test.

Conversations:
E.C.1 (omission) occurs 1-5% medially (in *fifteen* /ˈfɪtiːn/) in second interview.
E.C.5 (replacement) occurs 1-5% as /s/ initially (in *flat* /flæt/) in first interview.

Summary:
/fl/ is not difficult to pronounce in any position, especially as a single consonant. It has 1-5% of omissions as in *coughs* and is released as /p/ 1-5% in *triumphs*, with isolated replacements of /s/ in *flat* and /v/. Subjects showed 3% of errors in first test and 1% in second test, an improvement of 2 percentage points or 67%.
/v/

**Single consonants** (3 examples in *vat*, *avid*, *have*):

E.C.4 (replacement) occurs 10\% as /f/ initially and medially (in *vat* /fɛt/ and *avid* /ɛfɪd/),

60\% finally (in *have* /hɛf/) in first test and

20\% finally, in second test.

**Consonant clusters** (4 medial examples):

E.C.1 (omission) occurs 3\% (in *coughs* /kɔf/) in both tests.

E.C.4 (replacement) occurs 50\% as /f/ (as in *loved* /lɑːft/) in first test and

33\% in second test.

**Reading passages** (3 medial, 3 final examples):

E.C.1 (omission) occurs 7\% medially (in *attractiveness* /ɑtræktənəs/),

30\% finally (in *of* /ɔf/) in first test and

60\% finally in second test.

E.C.4 (replacement) occurs 20\% as /f/ medially (in *lives* /lɪvz/),

3\% finally (in *of* /ɔf/) in first test and

6\% medially, in second test.

E.C.5 (replacement) occurs 3\% as /v/ finally (in *of* /ɔv/) in first test.
Numbers 1-20 (3 medial, 2 final examples):

E.C.1 (omission) occurs 45% finally (as in five /fiːv/) in first test.

E.C.3 (over-articulation) occurs 3% as /və/ finally (in five /fiːvə/) in first test.

E.C.4 (replacement) occurs as 20% as /f/ finally (as in twelve /twʌlf/) in first test and 15% in second test.

Conversations:

E.C.1 (omission) occurs 10-20% finally (as in have /hæv/) in first interview.

E.C.4 (replacement) occurs 1-5% as /f/ medially (in overcome /əvəkʌm/) in first interview and 10-20% finally (as in arrive /əˈraɪv/) in both interviews.

E.C.5 (replacement) occurs 1-5% as /b/ finally (in have /hæb/), /p/ (have /hæp/) in first interview and /b/, /s/ (in improve /ɪmprəv/) in second interview.

Summary:

/v/ is sometimes difficult to pronounce in medial and final positions where it is replaced 10-20% with /f/ as in loved. It is also replaced 1-5% with /b/ as in of, /p/ or /s/ as in improve and is over-articulated 1-5% in five. Subjects
showed 29% of errors in first test and 13% in second test, an improvement of 15 percentage points or 55%.

/ʃ/  

**Single consonants** (3 examples in thin, nothing, myth).
E.C.3 (over-articulation) occurs 10% as /ʃ/ initially (in thin /ʃin/) and 2% as /ʃ/ medially (in health /helʃ/) in first test and 1% in second test.

E.C.4 (replacement) occurs 20% as /t/ in all positions (in thin /tin/, nothing /nætʃ/ and myth /mɪtʃ/) in first test and 20% initially, 10% medially and finally, in second test and 10% as /d/ finally (in myth /mɪdʃ/) in first test.

**Consonant clusters** (6 medial, 6 final examples):
E.C.1 (omission) occurs 27% medially (as in months /mɑːns/) 12% finally (in /sixth /sɪxtʃ/) in first test and 10% medially and finally, in second test.

E.C.2 (unreleased) occurs 5% medially (in both /bɔːtʃ/) in first test and
4% in second test.

E.C.4 (replacement) occurs 17% as /t/ finally (as in sixth /sɪt/) in first test and
8% in second test.
5% medially (as in months /mʌnts/) in both tests.
1% as /w/ medially (in healths /ˈheəˌwʌz/) in first test.

Reading passages (1 initial, 3 final examples):

E.C.1 (omission) occurs 3% finally (in forth /fɔːθ/) in both tests.

E.C.4 (replacement) occurs as 20% as /t/ initially (as in things /θɪŋz/),
33% finally (as in forth /fɔːt/) in first test and
10% initially,
13% finally, in second test.

Numbers 1-20 (2 initial examples):

E.C.4 (replacement) occurs 40% as /t/ initially (as in thirteen /ˈθɜːtn/) in first test and
10% in second test.

Conversations

E.C.1 (omission) occurs 1-5% medially (as in maths /mæts/) in first interview.
E.C.2 (unreleased) occurs 1-5% finally (in with /wɪt-/) in first interview only.

E.C.4 (replacement) occurs 10-20% as /t/ in all positions (as in thing /θɪŋ/ , Arthur /ɑːrtʃər/ and with /wɪt-/ in first interview and 1-5% finally, in second interview.

1-5% as /d/ medially (in something /sʌmθɪŋ/) in first interview and /s/ initially and finally (in things /θɪŋz/ and with /wɜːs/) in second interview.

E.C.5 (replacement) occurs 1-5% as /f/ initially (in think /θɪŋk/) in first interview.

Summary:

/θ/ is difficult to pronounce in all positions and is omitted 5-10%, especially in clusters as in months and in final position. It is replaced 10-20% with /t/ as in three in all positions and replaced 1-5% with /s/ as in things, /d/ as in something, /w/ as in healths and /f/ as in think. It is also over-articulated 1-5% with /θ/ as in healths. Subjects showed errors of 31% in first test and 14% in second test, an improvement of 17 percentage points or 55%.
Single consonants (3 examples in they, bather, bathe):
E.C.4 (replacement) occurs 60% as /θ/ finally (in bathe /baθ/),
   50% medially (in bather /bæθə/) in first test and
   10% initially (in they /θei/),
   40% medially and finally in second test.
   40% as /d/ initially (in they /daθ/),
   30% medially (in bather /bæθə/) in first test and
   40% initially,
   20% medially, in second test.
   10% as /tʃ/ medially (in bather /baθə/) in first test.
   10% as /t/ finally (in bathe /baθ/) in first test.

Consonant clusters (4 medial examples): 
E.C.1 (omission) occurs 17% (as in bathes /ˈbeθə/) in first test and
   7% in second test.
E.C.4 (replacement) occurs 35% as /θ/ (as in bathes /ˈbeθəs/) in first test and
   43% in second test.
   8% as /d/ (as in loathed /ˈloʊθə/) in first test.
   3% as /s/ (in clothed /ˈklothəd/) in first test.
in first test and
5% as /s/, /z/ in second test.

Reading passages (3 initial, 2 medial examples):
E.C.4 (replacement) occurs 27% as /d/ initially (as in the [\text{\texttt{\textstyle d}}])
33% medially (as in although /\texttt{\textstyle d}\texttt{\textstyle l}d\texttt{\textstyle o}u\texttt{\textstyle l}/)
in first test and
13% initially,
25% medially, in second test.
5% as /θ/ medially (in although /\texttt{\textstyle d}\texttt{\textstyle l}d\texttt{\textstyle o}u\texttt{\textstyle l}/) in second test.
E.C.5 (replacement) occurs 5% as /t/ (medially in although /\texttt{\textstyle d}\texttt{\textstyle l}t\texttt{\textstyle o}u\texttt{\textstyle l}/) in first test.

Conversations:
E.C.1 (omission) occurs 5-10% initially (as in them [\texttt{\textstyle th}em])
in first interview and
1-5% medially (in another [\texttt{\textstyle an}\texttt{\textstyle th}]) in second interview.
E.C.4 (replacement) occurs 20-30% as /d/ initially and medially in both interviews.
1-5% as /θ/ initially (in them [\texttt{\textstyle \texttt{\textstyle th}}em\texttt{\textstyle \texttt{\textstyle th}}] in first interview.
1-5% as /z/ initially (in the [\texttt{\textstyle \texttt{\textstyle th}}\texttt{\textstyle z}])
in first interview and
1-5% as /z/, /t/ initially (in the

112
Summary:

/ə/ is difficult to pronounce in all positions and is omitted 5-10% in initial position as in them /em/ and in clusters. It is replaced 10-20% with /d/ in all positions as in them and 1-5% with /tθ/ in bather, /t/ in bathe, /z/ in the, /s/ in clothe and /t/ in although. It is replaced 30-40% with /θ/ in word lists, but only 1-5% in readings and conversations. There appears to be a significant progression from /d/ in first test to unvoiced /ð/ in second test. Subjects showed 56% of errors in first test and 43% in second test, an improvement of 21 percentage points or 23%.

/s/

Single consonants (3 examples in sit, missile, hiss):

E.C.4 (replacement) occurs 20% as /z/ medially (in missile /mizarəl/) in first test and 10% as /ʃ/ medially (in missile /mɪʃarəl/) in both tests.

E.C.6 (extra phoneme) occurs 10% as /s/ initially (in thin /θin/) in first test.

Consonant clusters (11 initial, 23 medial, 30 final examples):

E.C.1 (omission) occurs 16% finally (as in moves /muvə/) in first test, 7% in second test and
1% medially (as in minc\(\text{ed}\) /m\(\text{int}\)/) in both tests.

E.C.3 (over-articulation) occurs 2% finally (as in lumps /l\(\text{umps}\)/) in first test and 1% finally, in second test.

E.C.4 (replacement) occurs 2% as /\(\text{f}\)/ medially (in astride /\(\text{a}\)str\(\text{i}\)/) and 1% initially (in street /\(\text{str}\)tri:\(\text{t}\)/) in first test.

E.C.5 (replacement) occurs 1% as /\(\text{z}\)/ medially (in months /\(\text{m}\)on\(\text{z}\)/) and /\(\text{d}\)/ (in bouncer /b\(\text{oun}\)der/) in first test.

E.C.6 (extra phoneme) occurs 1% as /\(\text{s}\)/ medially (in triumphed /\(\text{tr}\)a\(\text{i}\)m\(\text{f}\)st/)\(\),\)

1% finally (in whisked /\(\text{w}\)isk\(\text{t}\)/) in first test and 1% medially (in gasped /\(\text{g}\)a\(\text{s}\)p\(\text{st}\)/ and facts /\(\text{f}\)\(\text{t}\)\(\text{k}\)\(\text{st}\)/), 1% finally (in coaxed /\(\text{k}\)\(\text{o}\)\(\text{st}\)/) in second test.

E.C.8 (permutation) occurs 3% medially (as /\(\text{b}\)\(\text{a}\)\(\text{s}\)/ in absolve, /\(\text{k}\)\(\text{o}\)\(\text{n}\)\(\text{t}\)\(\text{k}\)\(\text{st}\)/ in contacts, /\(\text{g}\)\(\text{e}\)p\(\text{p}\)/ and /\(\text{g}\)\(\text{e}\)p\(\text{p}\)/ in gasps, /\(\text{p}\)\(\text{a}\)\(\text{t}\)\(\text{i}\)\(\text{k}\)/ in optics, /\(\text{p}\)\(\text{o}\)\(\text{t}\)\(\text{i}\)/ in patsy),

1% finally (as /\(\text{t}\)\(\text{a}\)\(\text{r}\)\(\text{m}\)\(\text{s}\)/ and /\(\text{k}\)\(\text{e}\)\(\text{m}\)\(\text{s}\)/ in chasm) in first test and 1% medially (as /\(\text{p}\)\(\text{o}\)\(\text{t}\)\(\text{i}\)/ in patsy),
1% finally (as /sɪps/ in gasp) in second test.

**Reading passages** (3 initial, 5 medial, 13 final examples):

E.C.1 (omission) occurs 5% finally (as in lives /laɪvz/) in first test and
2% in second test.

E.C.3 (over-articulation) occurs 1% as /zə/ finally (in friends /frendz/) in first test.

E.C.5 (replacement) occurs 1% as /t/ finally (in as /az/) in first test.

**Numbers 1-20** (4 initial, 1 final example):

E.C.1 (omission) occurs 10% finally (in six /sɪk/) in first test.

**Conversations:**

E.C.1 (omission) occurs 1-5% medially (as in interesting /'ɪntərɪŋ/) in both interviews.

5-10% finally (as in sometimes /'sɒmtaːm/) in first interview and
1-5% finally, in second interview.

E.C.3 (over-articulation) occurs 1-5% finally (as in as /æz/) in both interviews.

E.C.4 (replacement) /ʃ/ occurs 1-5% medially (as in lesson /'lɛsən/) in both interviews.

E.C.6 (extra phoneme) occurs 1-5% as /s/ initially and medially
(in because /biːskɔz/ and
thin /sθɪn/ in first test.

Summary:
/s/ is omitted 5-10% in medial, but mostly final position as in difference and is replaced 1-5% with /ʃ/ as in listening and 1-5% with /z/ as in missile, /d/ and /t/ as in as. /s/ is over-articulated 1-5% as in as /aʌ/, is an extra phoneme 1-5% as in because /bɪskɔs/ and has 1-5% of permutations as in gasp. Subjects showed 9% of errors in first test and 2% in second test, an improvement of 7 percentage points or 78%.

/z/

Single consonants (3 examples in zip, pizza, fizz):
E.C.3 (over-articulation) occurs 10% as /zɔ/ finally in fizz /fɪzɔ/ in first test.
E.C.4 (replacement) occurs 30% as /s/ initially (in zip /zɪp/), 20% medially and finally (in pizza /pɪza/ and fizz /fɪz/ in first test and 10% in all positions, in second test.
30% as /dʒ/ initially (in zip /dʒɪp/ in both tests.
10% as /ʃ/ finally (in fizz /fɪʃ/) in both tests.

Consonant clusters (9 medial, 8 final examples):
E.C.1 (omission) occurs 1% medially (in Mazda /meɪdə/),
4% finally (as in moves /muv/) in first test and
5% finally, in second test.

E.C.3 (over-articulation) occurs 3% as /zɔ/ finally (in moves /muv:zɔ/) in first test.

E.C.4 (replacement) /s/ occurs 62% medially (as in chasm /tʃasm/),
36% finally (as in ribs /rɪbz/) in first test and
48% medially,
30% finally, in second test.

E.C.5 (replacement) occurs 1% as /ʒ/ medially (as in midzone /mɪdzɔn/) in first test and
1% finally (as in bathes /baɪz/) in second test.

E.C.7 (misreading) occurs 1% as /ʒɔ/ finally (in bathes /bæθes/) in both tests.

Reading passages (2 medial, 6 final examples):

E.C.1 (omission) occurs 5% finally (as in lives /laɪv/) in first test and
3% in second test.

E.C.3 (over-articulation) occurs 5% as /zɔ/ finally (as in friends /frendzɔ/) in second test.

E.C.4 (replacement) occurs 33% as /s/ finally (as in is /ɪz/) in first test and
10% in second test.
2% as /d/ finally (in as /æd/) in both tests.

E.C.6 (extra phoneme) occurs 5% as /z/ (in usually /zu:zal/) in first test.

Conversations:

E.C.1 (omission) occurs 1-5% finally (as in otherwise /oʊzwaɪ/) in both interviews.

E.C.4 (replacement) /s/ occurs 5-10% finally (as in as /æs/), 1-5% medially (as in easy /ɪz/) in first interview and 1-5% finally, in second interview.

Summary:

/z/ is omitted 1-5% in final position and in clusters, and is replaced 10-20% with /s/ as in fizz in final position.
/z/ has twice as many errors in clusters where it is replaced 40-50% with /s/ as in dozed. It is replaced 1-5% with /s/, /dʒ/ in zip in initial position and 1-5% with /ʃ/ in fizz, /ʒ/ in bathes and /d/ in final position. There are 1-5% of over-articulations in final position as /zʃ/ in friends, /ʒs/ and /ʒz/ in bathes. Subjects showed 44% of errors in first test and 27% in second test, an improvement of 17 percentage points or 39%.

118
/ʃ/

Single consonants (3 examples in ship, fisher, fish):
E.C.4 (replacement) occurs 10% as /s/ initially and medially (in ship /ʃɪp/ and fisher /ʃɪsə/) in first test.

Consonant clusters (4 medial examples):
No errors recorded.

Reading passages (3 medial examples):
E.C.4 (replacement) occurs 33% as /s/ medially (as in usually /ˈjuːsəli/) in first test and 7% in second test.

Conversations:
E.C.1 (omission) occurs 1-5% medially (in distinguished /ˈdɪstɪŋwɪt/) in first interview.
E.C.4 (replacement) occurs 5-10% as /s/ medially (as in operation /əˈpərəʃən/), 1-5% initially and finally (as in sure /ʃʊr/ and wish /wɪʃ/) in first interview and 1-5% in all positions in second interview.

Summary:
/ʃ/ is replaced with /s/ 10-20% as in fish in all positions
and is omitted 1-5% medially as in distinguished. Subjects showed 8% of errors in first test and 1% in second test, an improvement of 7 percentage points or 88%.

\[ /\ z/ \]

**Single consonants** (2 examples in vision, rouge):

E.C.4 (replacement) occurs 20% as /z/ medially (in vision /\vize\n/ in first test and 10% medially and finally (in rouge /\rou\n/) in second test.

5% as /s/ medially (in vision /\vis\n/) in first test.

E.C.3 (over-articulation) occurs 10% as /dz/ medially (in vision /\vid\n/)

30% as /dz/ finally (in rouge /\roudz/) in first test and 10% in second test

10% as /t\j/ finally (in rouge /\rout/) in both tests.

**Readings** (1 medial example):

E.C.1 (omission) occurs 10% (in usually /\u:u:i:/) in both tests.

E.C.4 (replacement) occurs 20% as /z/ (in usually /\ju:za:l/) in first test and 10% in second test.

30% as /s/ (in usually /\u:stel/) in first test.
**Summary:**

/ʒ/ has 20-30% of errors in reading *usually*, where it is omitted or replaced with /z/ or /s/. It also has 5-10% replacements of /tʃ/ and /dʒ/ in *rouge*. Subjects showed 43% of errors in first test and 38% in second test, an improvement of 5 percentage points or 12%.

/h/

**Single consonants** (2 examples in *hat, ahead*):

No errors recorded.

**Reading passages** (3 initial examples):

No errors recorded.

**Numbers 1-20** (1 medial example):

No errors recorded.

**Conversations**:

No errors recorded.

**Summary**:

As there are no errors recorded in first and second tests or interviews, I conclude that this consonant is not difficult for subjects to pronounce.
Single consonants (3 examples in main, famous, frame):
E.C.5 (replacement) occurs 10% as /n/ finally (in frame /fren/) in first test.

Consonant clusters (3 initial, 15 medial, 2 final examples):
E.C.1 (omission) occurs 5% finally (in chasm /tʃəːm/),
1% medially (in prompted /pɒrʌmt/) in first test and
5% finally, in second test.
E.C.5 (replacement) occurs 5% as /p/ finally (in chasm /tʃæs/) in first test.

Reading passages (7 initial, 4 medial, 1 final phoneme):
E.C.1 (omission) occurs 30% finally (in prime /praɪ/) in second test.
E.C.5 (replacement) occurs 10% as /s/ finally (in prime /praɪz/) in first test.

Conversations:
E.C.2 (unreleased) occurs 1-5% medially (in sometimes /ˈsʌm-tɜːms/) in first interview.

Summary:
/m/ is not difficult for subjects to pronounce, but has 1-5% odd omissions, one in medial position as in prompted and others in final position as in prime. It also has 1-5% odd replacements
of /n/ as in frame, /s/ in prime and /p/ in chasm. Subjects showed 3% of errors in first test and 4% in second test, a regression of 1 percentage point or 33%.

/n/

**Single consonants** (3 examples in net, henny, pen):
No errors recorded.

**Consonant clusters** (24 medial, 2 final examples):

E.C.1 (omission) occurs 10% medially (as in background /bækgrəud/ in first test and 5% in second test.

E.C.4 (replacement) occurs 6% as /ŋ/ medially (in lunged /læŋt/ and /læŋgəd/) in both tests.

E.C.6 (extra phoneme) occurs 1% as /n/ medially (in dozed /douzəd/ and menthol /ˈmenthoʊl/) and

1% finally (in minced /ˈmɪnsənd/) in first test.

**Reading passages** (1 initial, 22 medial, 3 final examples):

E.C.1 (omission) occurs 6% medially (as in account /əˈkaʊnt/ and bouncer /ˈbɔrnər/) in first test and 5% in second test.
Numbers 1-20 (1 initial, 1 medial, 11 final examples):
E.C.1 (omission) occurs 50% medially (in nineteen [naɪtɪn]),
            35% finally (as in nine [naɪn] in
            first test and
            20% medially,
            5% finally in second test.
E.C.2 (unreleased) occurs 10% medially (in nineteen [naɪn-tɪn])
            in first test.

Conversations:
E.C.1 (omission) occurs 10-20% medially (in pronounce [prənəʊs]),
            5-10% finally (in down [daʊn]) in
            first interview and
            1-5% medially in second interview.
E.C.4 (replacement) occurs 1-5% as /ŋ/ medially and finally
            (in find [faɪnd] and fine [faɪn])
            in first interview.
            1-5% as /k/ finally (as in design
            [dɛzain] in first test.

Summary:
/n/ is not difficult to pronounce as a single consonant, but
is omitted 5-10% in clusters particularly before /t/ as in
account or /s/ as in bouncer, and in final position as in
down. It is also omitted before other consonants such as /d/
in background and /t/ as in account. It is replaced 5% with
/ŋ/ (in lunged [laŋgd]) where it automatically changes before
mispronouncing /g/. It is also replaced 1-5% with /ŋ/ as in find. Subjects showed 10% of errors in first test and 3% in second test, an improvement of 7 percentage points or 70%.

/ŋ/

**Single consonants** (2 examples in singer, thing):

E.C.3 (over-articulation) occurs 50% as /ŋg/ medially (in singer /ˈsɪŋər/),

10% as /ŋŋ/ finally (in thing /θɪŋ/) in first test and

40% as /ŋg/ in second test.

**Consonant clusters** (4 medial examples):

E.C.4 (replacement) occurs 5% as /n/ (in thanked /ˈθæŋkt/) in both tests.

E.C.6 (extra phoneme) occurs 1% as /ŋ/ finally (in trudged /ˈtrʌdʒd/) in first test.

**Reading passages:** (1 medial example):

E.C.4 (replacement) occurs 10% as /ŋ/ (in thanked /ˈθæŋkt/) in first test.

**Conversations:**

E.C.3 (over-articulation) occurs 1-5% as /ŋk/ medially (in English /ˈɛŋklɪŋ/) and

1-5% as /ŋŋ/ finally (as in
tongue /tɒŋkə/) in first interview.

E.C.4 (replacement) occurs 5-10% as /n/ finally (as in studying /ˈstʌdɪŋ/) in both interviews.

Summary:
/r/ is replaced 10-20% with /n/ in clusters as in thanked /ˈtæŋkəd/ and 5-10% in final position as in living. It is over-articulated 10-20% in medial and final positions as in tongue. Subjects showed errors of 16% in first test and 8% in second test, an improvement of 8 percentage points or 50%.

/l/

Single consonants (3 examples in leg, teller, sell):
E.C.4 (replacement) occurs 50% as /v/ finally (in sell /sɛlv/) in first test and 10% in second test.
10% medially (in teller /tevə/) in both tests.

Consonant clusters (30 medial, 5 final examples):
E.C.1 (omission) occurs 20% medially (as in sulks /ˈsʌks/) in first test and 12% medially, in second test.
E.C.4 (replacement) occurs 36% as /v/ finally (as in able /ˈeɪbl/) 17% medially (as in sulks /ˈsʌks/)
in first test and
14% finally,
11% medially in second test.
4% as /ʊ/ medially (as in films /flɪms/) in first test and
3% in second test.
3% as /n/ medially (as in cults /kʌlts/) in first test.
2% as /ɔ/ medially (as in cults /kəlts/) in first test and
1% as /ɔːː/finally (as in haggle /ˈhægl/) in both tests.
1% as /m/ medially (in helps /helps/) in first test.
1% as /ŋ/ medially (in cults /kʌŋks/) in second test.

Reading passages (3 initial, 7 medial, 8 final examples):

E.C.1 (omission) occurs 29% finally (as in handful /ˈhænfl/),
11% medially (as in difficult /ˈdɪfɪkt/) in first test and
23% finally,
3% medially, in second test.

E.C.4 (replacement) occurs 38% as /ʊ/ finally (as in people /ˈpiːpl/),
3% medially (in difficult /ˈdɪfɪkt/) in first test and
31% finally,
1% medially in second test.
4% as /ɔ:/ finally (as in haggler /hæglə/) in first test and 3% in second test.
1% as /n/ medially and finally (in although /ɔnəlʌ/) and people /pi:pm/) in first test.
1% as /l/ medially (in clearly /kliəl/) in both tests.
1% as /w/ medially (in personality /p3:nə'wɪtɪ/) in first test.
E.C.5 (replacement) occurs 1% as /s/ finally (in physical /fɪzɪkəl/) in second test.

Numbers 1-20 (2 medial examples):
E.C.4 (replacement) occurs 30% as /v/ medially (in twelve)
/twɛvə/) in both tests.

Conversations
E.C.1 (omission) occurs 5-10% medially (as in help /hɛlp/),
1-5% finally (as in full /fʊl/) in first first interview and
1-5% medially and finally in second interview.
E.C.4 (replacement) /v/ occurs 5-10% finally (as in well /wel/) 1-5% medially (as in help /hɛlp/)
in first interview and 1-5% finally and medially in second interview.
1-5% as /ʃ/ finally (as in little /lɪtʃ/) in first interview.
1-5% as /l/ and /r/ medially (as in problem /prəbləm/ and follow /fɔˈrəʊ/)  
1-5% as /ɔ:/ finally (as in special /ˈspɛʃəl/) in first interview and
1-5% as /n/ finally (as in all /ɔn/) in second interview.

Summary:
In medial and final positions /l/ is omitted 10-20% and replaced  
10-20% with /ŋ/ as in people. It is also replaced 1-5% with /ʃ/  
as in films and 1-5% with /n/ in cults, /s/ in physical,  
/r/ in follow, /ɔ:/ in haggle and /l/ in clearly. Subjects  
showed 26% of errors in first test and 14% in second test,  
an improvement of 12 percentage points or 46%.

/r/

Single consonants (2 examples in red, beret):
E.C.4 (replacement) occurs 10% as S.V. /r/ initially (in red  
/ˈrɛd/).
40% medially (in beret /beret/) in first test and
20% initially.
30% medially, in second test.

Consonant clusters (18 medial examples):
E.C.1 (omission) occurs 1% (in abbreviate /æbrɪˈveɪt/) in both
tests.
E.C.4 (replacement) S.V. /r/ occurs 15% (as in agree /əˈɡriː/) in first test and
12% in second test.

Reading passages (2 initial, 11 medial examples):
E.C.1 (omission) occurs 2% medially (as in difference /ˈdɪfenz/) in first test.
E.C.4 (replacement) S.V. occurs 19% as S.V. /r/ medially (as in
friendship /ˈfrendʃɪp/) first test and
10% medially,
5% initially (in relate /ˈrelɪt/) in second test.
2% as /w/ medially (in prime /ˈpraɪm/) in both tests.
E.C.6 (extra phoneme) occurs 1% as S.V. /r/ (in first /frəst/) in first test.
Numbers 1-20 (1 medial example):

E.C.4 (replacement) occurs 10% as S.V. /r/ (in three /θriː/) in first test and
20% in second test.

E.C.6 (extra phoneme) occurs 10% as S.V. /r/ medially (in
fourteen /fɔːtiːn/) in both tests and
10% medially in (fourteen
/ˈfɔːtiːn/) in first test.

Conversations:

E.C.1 (omission) occurs 1-5% medially (as in from /fɔːm/) in both interviews.

E.C.4 (replacement) occurs 10-20% as S.V. /iː/ medially (as
in properly /ˈprɒbliː/) in first interview,
5-10% in second interview and
1-5% initially (as in wrong /θrɔŋ/) in both interviews.

E.C.5 (replacement) occurs 1-5% as /l/ and /ʃ/ medially (in
problem /ˈprɒbləm/ and structural
/ˈstrʌktʃəl/) in first interview and
1-5% as /ʃ/ medially, in second interview.

E.C.6 (extra phoneme) occurs 1-5% as S.V. /r/ (in too /tuː/) in first test.
Summary:
/r/ is replaced 10-20% with the flapped S.V. /r/ as in agree, mostly in medial and occasionally in initial position. It is omitted 1-5% in medial position as in favourable and replaced with /ʁ/ as in try, /w/ initially and /l/ problem. It is also an extra phoneme 1-5% as in first. Subjects showed 17% of errors in both tests, showing no improvement.

/j/

Single consonants (2 examples in yaught, foyer):
E.C.1 (omission) occurs 10% medially (in foyer /fɔː3ʃ/) in both tests.
E.C.4 (replacement) occurs 10% as /d/ initially (in yaught /dɔtʃ/),
30% as /ʒ/ initially (in yaught /ʒɔtʃ/),
10% as S.V. /ʃ/ medially (in foyer /ʃɔː3ʃ/) in first test and
10% as /ʌʒ/ initially (in yaught /ʌʒɔtʃ/) in second test.

Reading passages (1 initial example):
E.C.1 (omission) occurs 10% (in usually /juːzəliʃ/) in first test.
E.C.4 (replacement) occurs 10% as /z/ (in usually /zuːzəliʃ/) in second test.
Summary:
/j/ is replaced initially 5-10% with /d/ or /dz/ in \textit{yaught} and omitted or replaced with S.V. /\textipa{ʃ}/ medially in \textit{foyer} in word lists. Subjects showed 18% of errors in first test and 10% in second test, an improvement of 8 percentage points or 44%.

/w/

\textbf{Single consonants} (2 examples in \textit{wait, away}):
No errors recorded.

\textbf{Consonant clusters} (7 medial examples):
E.C.4 (replacement) occurs 3% as /ə/ (as in \textit{twice}) \textit{/traɪs/} in first test and 1% in second test.
E.C.5 (replacement) occurs 1% as /v/ (in \textit{dissuade}) \textit{/dɪsvəɪ/} in first test.

\textbf{Reading passages} (7 initial, 1 medial example):
E.C.1 (omission) occurs 10% medially (in \textit{acquainted} \textit{/əˈkɒntɪd/}) in first test.
E.C.6 (extra phoneme) occurs 1% as /w/ finally (in \textit{handful}) \textit{/hændfəʊ/} in first test.

\textbf{Numbers 1-20} (1 medial example):
E.C.4 (replacement) occurs 10% as /r/ medially (in \textit{twenty}) \textit{/ˈtrentiː/} in first test.
Conversations:

E.C.6 (extra phoneme) occurs 1-5% finally (in like /laɪkw/) and handful /hændfəʊw/) in first interview.

Summary:

/w/ is not difficult to pronounce, particularly in initial position where no errors occur. It is replaced 1-5% with /r/ in twenty and /v/ in dissuade, or omitted as in aquainted in medial position. It is an extra phoneme 1-5% as in like. Subjects showed 3% of errors in first test and none in second test, an improvement of 3 percentage points or 100%.
5.4 Consonant clusters

/ps/

Word lists (2 examples in capsicum and maps):
E.C.1 (part omission ab→b) occurs 30% (in capsicum /kæskɪm/) in first test and 20% in second test.
No replacements are recorded in maps.

Subjects showed 15% of errors in first test and 10% in second test, showing an improvement of 5 percentage points.
See summary below under /pt/.

/pt/

Word lists (2 examples in optics and jumped):
E.C.1(part omission ab→a) occurs 20% as /p/ (in jumped /dʒæmp/) in both tests.
(ab→b) 10% as /t/ (in jumped /dʒæmt/) in first test.
E.C.4(part replacement ab→cb) occurs 10% as /f/ (in optics /ɔftɪks/) in both tests.
E.C.6(added phoneme ab→acb) occurs 10% as /pst/ (in optics /ɔpstɪks/) in first test.

Subjects showed 25% of errors in first test and 15% in second test, an improvement of 10 percentage points.
See summary below under /pr/.
/pl/

Word lists (3 examples in please, applaud and apple).
E.C.1(part omission ab→a) occurs 10% as /p/ (in applaud /æpləd/) in first test.
E.C.4(part replacement ab→cb) occurs 40% as /bl/ (in please /blɪːz/) 10% as /bl/ (in applaud /əbləd/) in first test and (ab→ac) 20% as /pw/ (in apple /æpə/) in second test.
E.C.4(replacement ab→cd) occurs 10% as /bɔː/ (in apple /æbɔː/) in first test.

Conversations:
E.C.4(part replacement ab→ac) occurs as /pɔː/ (in example /ɪgˈsɛmplə/) .
E.C.4(replacement ab→cd) occurs as /buː/ (in people /ˈpiːpl/) .

Subjects showed 35% of errors in first test and 7% in second test, an improvement of 28 percentage points.
See summary below under /pr/.

/pr/

Word lists (2 examples in prove and approve):
E.C.4(part replacement ab→ac) occurs 30% as /pr/ in first test and 20% in second test.
30% as /pr/ (in *approve* /əpru:v/) in first test and 10% in second test.

E.C.4(replacement ab→cd) occurs 10% as /br/ (in *prove* /bru:v/) in second test.

Conversations:

E.C.1(part omission sb→a) occurs as /p/ (in pronunciation /prənæns;eiʃən/).

E.C.4(part replacement ab→ac) occurs as /pr'/ (in *problem* /prəblem/) and /pl/ (in *problem* /pləblem/).

E.C.4(replacement ab→cd) occurs as /br'/ (in *properly* /brəbliː/).

Subjects showed 30% of errors in first test and 20% in second test, an improvement of 10 percentage points.

**Summary (/ps/, /pt/, /pl/, /pr/):**

In clusters, /p/ is omitted before /s/ 15% as in *capsicum* in medial but not in final position. It is replaced with /f/ before /t/ 15% in *optics* in medial position and with /b/ before /l/ 15% as in *please* in all positions, especially initial. Following /p/, /r/ is replaced with S.V. /r'/ 50% in *prove*.

Also, /l/ is omitted in medial position 5% in *subset* and replaced with /u/, /ɔː:/ 40% as in *apple* in final position.
Word lists (2 examples in abduct and grabbed):

E.C.1 (part omission ab→b) occurs 10% as /a/ (in abduct /ədʒʌkt/) in first test and (ab→a) 10% as /b/ (in grabbed /gɹɛbdʒ/) in both tests.

E.C.9 (omission and replacement ab→c) occurs 10% as /p/ (in grabbed /ɡɹɛbdʒ/) in first test.

E.C.3 (over-articulation) occurs 10% as /bdʒ/ (in grabbed /ɡɹɛbdʒ/) in first test.

E.C.4 (replacement ab→cd) occurs 60% as /pt/ in (grabbed /ɡɹɛpt/) in first test and 50% in second test.

E.C.7 (misreading ab→acb) occurs 10% as /ŋt/ (in grabbed /ɡɹɛbnt/) in first test and 10% as /ɡəd/ (in grabbed /ɡɹɛɡəd/).

E.C.10 (part replacement and extra phoneme ab→cdb) occurs 10% as /ɡəd/ (in abduct /ədʒʌkt/) in second test.

Subjects showed 60% of errors in first test and 40% in second test, an improvement of 10 percentage points.

See summary below under /br/.
Conversations:
E.C.4 (part replacement ab→bc) occurs as /pdʒ/ (in subjects /səp dysfunctional/).

See summary below under /br/.

Word lists (2 examples in solve and ribs):
E.C.1 (part omission ab→c) occurs 10% as /s/ (in solve /səlv/) in both tests.
E.C.4 (part replacement ab→bc) occurs 80% as /ps/ (in ribs /rɪps/) in first test and 70% in second test.
10% (in solve /lpsəlv/) in first test and 70% in second test.
(ab→bc) 10% as /ks/ (in ribs /sɪks/) first test.
E.C.8 (permutation ab→acb) occurs 10% as /baːs/ (in solve /baːsɪv/) in both tests.

Subjects showed 95% of errors in first test and 80% in second test, an improvement of 5 percentage points.
See summary below under /br/.
Word lists (3 examples in black, sublet and able):  
E.C.1 (part omission ab→c) occurs 10% as /p/ (in sublet əˈsæpt/)  
in both tests.  
E.C.4 (part replacement ab→ac) occurs 40% as /bʌ/ (in able əˈbʌbl/)  
in first test and  
20% in second test.  
(ab→cb) 10% as /pl/ (in sublet əˈsæplet/) in first  
test and  
10% as /pl/ (in black ˈplɛk/) in second test.  
(ab→ac) 10% as /baː/ (in able əˈbɛbl/)  
in both tests.  

Conversations:  
E.C.1 (part omission ab→a) occurs in probably as /ˈprobiː/.  
E.C.4 (part replacement ab→cb) occurs as /pl/ (in problem ˈpləˌbɑrm/)  
(ab→ac) /bʌ/ (in double ˈdʌbl/  
possible ˈpəʊsəbl/) and (ab→ac)/bɔːr/ (in trouble ˈtrʌblər).  

Subjects showed 20% of errors in first test and 13% in second  
test, an improvement of 7 percentage points.  
See summary below under /br/.  

140
/br/

Word lists (2 examples in break and abbreviate):
E.C.4(part replacement ab→cb) occurs 10% as /pr/ (in abbreviate /prɪˈvɪɛt/) in first test and
20% in second test.
10% as /pr/ (in break /prɛk/) and
(ab→ac) 10% as /bɛk/ (in break /brɛk/) in both tests.

E.C.4(replacement ab→cd) occurs 10% as /pr/ (in abbreviate /prɪˈvɪɛt/) in first test.
E.C.9(part omission ab→c) occurs 10% as /p/ (in abbreviate /prɪˈvɪɛt/) in second test.

Subjects showed 20% of errors in first test and 25% in second test, a regression of 5 percentage points.

Summary (/bd/, /bdʒ/, /bz/, /bl/, /br/):
In clusters, /b/ is replaced with /p/ 7% in initial position,
17% in medial position in /bdʒ/, /bd/, /bl/, /br/ as in abbreviate and omitted before /d/ 3% in abduct in medial position. In /bz/, this jumps to an overall replacement of 75% with /ps/ as in absolve. In medial position /bl/ and /br/ are replaced 15% with /p/, and in final position /bl/ is replaced 30% with /bʌ/ and /bɔː/ as in able. In /br/, /r/ is replaced 15% with S.V. /ɹ/ as in break and in conversation, /b/ is
replaced with /p/ as in subjects.

/ts/

Word lists (2 examples in patsy and sits):

E.C.1 (part omission \(ab\mapsto b\)) occurs 60\% as /s/ (in patsy /p\siʃ/) in first test and 30\% in second test.

20\% as /s/ (in sits /s1sʃ/) in both tests.

(ab\mapsto a) 10\% as /t/ (in sits /s1tʃ/) in second test.

E.C.4 (part replacement \(ab\mapsto cb\)) occurs 10\% as /ks/ (in sits /s1ksʃ/) in first test.

E.C.8 (permutation \(ab\mapsto ba\)) occurs 10\% as /st/ (in patsy /p\ɛstiʃ/) in second test.

Conversations:

E.C.4 (part replacement \(ab\mapsto b\)) occurs as /s/ (in that's /θɛsʃ/), (it's /its/) and (parts /pa:sʃ/).

Subjects showed 55\% of errors in first test and 10\% in second test, an improvement of 45 percentage points.

See summary below under /tw/.
/tʃt/

Word lists (2 examples in pitched and watched it):

E.C.1(part omission ab→b) occurs 10% as /t/ (in pitched /pitʃ/) in both tests.

(ab→a) 50% as /tʃ/ (in watched it /wtʃʃtʃ/) in first test and 40% in second test.

30% as /tʃ/ (in pitched /pitʃʃ/) in first test and 20% in second test.

10% as /tʃasʃ/ (in watches it /wtʃʃasʃtʃ/) in first test and

10% as /tʃasʃ/ (in pitched /pitʃʃasʃ/) in both tests.

E.C.4(part replacement ab→cb) occurs 10% as /ʃt/ (in watched it /wtʃʃtʃ/) and

E.C.4(replacement ab→bc) occurs 10% as /st/ (in pitched /pitʃʃstʃ/) in first test and

E.C.7(misreading ab→acb) occurs 10% as /ʃʃt/ (in pitched /pitʃʃʃtʃ/) in first test and

(ab→acd) 10% as /ʃʃd/ (in pitched /pitʃʃʃdʃ/) in second test.

10% as /ʃʃd/ (in watched it /wtʃʃʃdʃ/) in both tests.

E.C.9(replacement and omission ab→c) occurs

10% as /ts/ (in watched it
Subjects showed 75% of errors in first test and 50% in second test, an improvement of 25 percentage points.
See summary below under /tw/.

/tl/

Conversations:
E.C.4(part replacement ab→ac) occurs as /tʒ/ (in little /lɪtʃ/).
E.C.4(replacement ab→cd) occurs as /dʒ/ (in title /taɪdʒ/).

See summary below under /tw/.

/tr/

Word lists (2 examples in trick and attract):
E.C.4(part replacement ab→ac) occurs 20% as /tr/ (in attract /ətrɪktʃ/) in first test and 10% in second test.
10% as /tr/ (in trick /trɪkʃ/) in both tests.
10% as /tʃ/ (in trick /trɪkʃ/) in first test and (ab→cb) 10% as /dr/ (in trick /drɪkʃ/) in second test.
Conversations:
E.C.1 (part replacement ab->ac) occurs as /tʃ/ (in try /tʃaɪ/) and (ab->cd) /dr/ (in try /drəɪ/).

Subjects showed 20% of errors in first test and 15% in second test, an improvement of 5 percentage points.
See summary below under /tw/.

/tw/

Word lists (2 examples in twice and atwirl):
E.C.4 (part replacement ab->cb) occurs 20% as /dw/ (in atwirl /dʒwiːl/) in first test and
10% as /gw/ (in atwirl /ɡwiːl/) in second test.
(ab->ac) 10% as /tr/ (in twice/træs/) in first test and
20% in second test.
10% as /tʃ/ (in twice /tʃaɪ/) in first test.

Subjects showed 20% of errors in first test and 15% in second test, an improvement of 5 percentage points.

Summary (/ts/, /tʃt/, /tl/, /tr/, /tw/):
In clusters, /t/ is omitted 33% in /ts/ in patsy and reversed 3% as /st/ in patsy. In /tʃt/ the first /t/ is omitted 8%
in *watched*, and final /t/ is omitted 38% in *pitched*. /t/ is replaced with /d/ 4% in /tl/, /tr/ and /tw/ as in *atwirl.* /t/ is replaced 3% with /ɡ/ in /tw/ *atwirl* and 3% with /k/ in /ts/ *sits*. /s/ replaces /tʃ/ 3% in /tʃt/ *pitched*, and /r/, /ʃ/ replace /w/ 7% in /tw/ *twice*. S.V. /r/ replaces /r/ 13% in /tr/ *trick*. Final /t/ becomes over-pronounced 8% as /ɑt/ and /ɒd/ in /tʃt/ *pitched* and replaced with a different form as /ɒs/ in *watched*. In final position in conversation the /tl/ is replaced with /tʃ/ and /tʃ/ in *title*.

/dz/

*Word lists* (2 examples in *midzone* and *needs*):

E.C.1(part omission ab→b) occurs 50% as /s/ (in *needs /nisʃ/*)

in first test and

30% in second test.

10% as /z/ (in *midzone /mizɔnʃ/*)

in both tests.

10% as /z/ (in *needs /nisʃ/*)

in second test.

E.C.4(part replacement ab→cb) occurs 20% (as /sz/ (in *midzone /mizɔnʃ/*)

and

10% as /dz/ (in *midzone /mizɔnʃ/*) in first test.

E.C.4(replacement ab→cd) occurs 50% as /ts/ (in *needs /nitsʃ/*) in first test and

10% in second test.

30% as /ts/ (in *midzone*
\( /\text{mitsoun}/ \) in first test and 10% in second test.

10% as /td\(\text{j}/ \) (in midzone
\( /\text{mitd\text{j}on}/ \) in both tests.

Conversations:
E.C.4(replacement ab\(\rightarrow\)cd) occurs as /ts/ (in words \( /\text{werts}/ \)) and
/k-s/ (in words \( /\text{werk-s}/ \)).
E.C.9(omission and replacement ab\(\rightarrow\)c) occurs as /s/ (in words \\
\( /\text{w}s/ \)).

Subjects showed 90% of errors in first test and 75% in second test, an improvement of 15 percentage points.

See summary below under /dr/.

/dr/

Word lists (2 examples in drink and adrift):
E.C.1(part omission ab\(\rightarrow\)b) occurs 10% as /r/ (in drink \( /\text{tr\text{j}}k/ \)) and
10% as /r/ (in adrift \( /\text{trift}/ \))
in first test.
E.C.4(part replacement ab\(\rightarrow\)cb) occurs 40% as /tr/ (in drink
\( /\text{tr\text{j}}k/ \)) and
40% as /tr/ (in adrift
\( /\text{trift}/ \)) in first test and
30% in second test.
(ab\(\rightarrow\)ac) 10% as /\text{ar}/ (in drink
\( /\text{drink}/ \) in both tests.
20% as /\text{dr}/ (in \textit{adrift}
\( /\text{drift}/ \) in second test.

\textbf{Conversations:}

E.C.4 (part replacement ab\(\rightarrow\)cb) occurs as /\text{tr}/ (in \textit{droop}
\( /\text{trup}/ \)) and
(ab\(\rightarrow\)ac) /\text{dr}/ (in \textit{hydraulics}
\( /\text{haidfoliks}/ \)).

Subjects showed 65% of errors in first test and 50% in second
test, an improvement of 15 percentage points.

\textbf{Summary} (/\text{dz}/, /\text{dr}/):
In clusters, /\text{d}/ is omitted 45% before /\text{z}/ and 10% before
/r/ as in \textit{drink}. /\text{d}/ becomes /\text{t}/ and /\text{z}/ becomes /\text{s}/ 45% in
/\text{dz}/ \textit{midzone} and /\text{dr}/ \textit{drink}. /\text{z}/ becomes /\text{j}/ 20% medially
as in \textit{midzone}.

\( /\text{kt}/ \)

\textbf{Conversations:}

E.C.1 (part omission ab\(\rightarrow\)b) is /\text{t}/ (in \textit{actually}
\( /\text{ئالت}/ \)).

See summary below under /\text{kw}/.
Conversations:
E.C.1(part omission ab→a) occurs as /k/ (in *six* /sɪk/)

(above) /s/ (in *accepted as*

/əспɛktəd/),

(in accent /əsent/) and

(in *six* /sɪs/) 7 times.

See summary below under /kw/.

Conversations:
E.C.1(part omission ab→b) occurs as /ʃ/ (in *introduction*

/ɪntrəˈdʌʃən/).

See summary below under /kw/.

Word lists (3 examples in *class, acclaim, tickle*):
E.C.4(part replacement ab→ac) occurs 30% as /kw/ (in *tickle*

/tɪkəl/) in first

test and

20% in second test.

(ab→cb) 20% as /gl/ (in *class*

/klɑːs/) in first

test and

30% in second test.
10% as /gl/ (in acclaim /əˈkleɪm/) in second test.
10% as /k-1/ (in acclaim /ˈk-leɪm/) and
10% as /əl/ (in acclaim /əˈkleɪm/) in first test.

**Conversations:**

E.C.4 (part replacement ab→cb) occurs as /gl/ (in class /ɡlaːs/) twice and
/k-1/ (in clearly as /ˈk-lɪəli/).

Subjects showed 35% of errors in first test and 30% in second test an improvement of 5 percentage points.
See summary below under /kw/.

**/kr/**

**Word lists** (2 examples in crate and across):

E.C.1 (part omission ab→a) occurs 10% as /k/ (across /əˈkrɔs/) in second test.

E.C.4 (part replacement ab→cb) occurs 40% as /gr/ (in across /əˈɡrɔs/) in first test and
30% in second test.
30% as /gr/ (in crate /ɡreɪt/) in first test and
40% in second test.

10% as /k-r/ (in crate /k-reat/) in first test.

(ab->ac) 10% as /kr/ (in across /krəs/) in both tests.

20% as /kr/ (in crate /kreit/) in both tests.

Conversations:

E.C.4 (part replacement ab->cb) occurs as /k-r/ (in Footscray /fust-reat/).

Subjects showed 55% of errors in first test and 60% in second test a regression of 5 percentage points.

See summary below under /kw/.

/kw/

Word lists (2 examples in quick and aquire):

E.C.4 (part replacement ab->cb) occurs in 10% as /gw/ (in quick /gwık/) and

10% as /gw/ (in aquire /gwarə/) in both tests.

Subjects showed 10% of errors in both tests.
Summary (/ktʃ/, /ks/, /k/, /kl/, /kr/, /kw/):
In clusters, /k/ is omitted in conversation in /ktʃ/, /ks/ and /kʃ/ as in introduction and replaced with /g/ 35% in /gr/ across, 15% in /kl/ class and 10% in quick. /k/ is also replaced in /kl/ 10% with S.V. /ʃ/, /k-1/ in acclaim and /l/ is replaced with /ɻ/ in tickle. In /kr/, /ṙ/ is replaced 15% with S.V. /чрежден/ as in crate.

/gl/

Word lists (3 examples in gloss, aglo, haggle):
E.C.4(part replacement ab-ac) occurs 50% as /ɡw/ (in haggle /hɛɡw/) in first test and
10% in second test.
10% as /ɡʃ:/ (in haggle /hɛɡʃ/) in second test.
(ab+cb) 40% as /kl/ (in gloss /kl(ɔs/) in first test and
20% in second test.
30% as /kl/ (aglo /kloʊ/) in both tests.
10% as /ɻl/ (in gloss /ɻl(ɔs/) in first test.
10% as /ɻl/ (aglo /ɛɻlɔʊ/) in first test.
10% as /k-1/ (aglo /ɛk-1ɔʊ/)
in both tests.

E.C.4 (replacement ab→cd) occurs 10% as /bɔ/ (in hagg đ [məbɔ])
in first test.

10% as /kɔ/ (in hagg đ [həkɔ])
in second test.

Subjects showed 53% of errors in first test and 27% in second
test, an improvement of 26 percentage points.

See summary below under /gr/.

/gr/

Word lists (2 examples in grey and agree):

E.C.4 (part replacement ab→cb) occurs 30% as /kr/ (in grey
[krɪ]] in both tests.

30% as /kr/ (in agree
[ɛkrɪ:]] in first
test and

20% in second test.

20% as /kɔ/ (in grey/kɔrɪ])
in first test and

10% in second test.

10% as /kɔ/ (in agree/kɔrɪ:])
in both tests.

10% as /kɔr/ (in agree
[ɛkɔrɪ:]] in first test.

(ab→ac) 20% as /ɔr/ (in agree
[ɔkɔrɪ:])
10% as /gr/ (in grey/ɡreɪ/) in both tests.

**Conversations:**

E.C.4 (part replacement ab→cb) occurs as /kr/ (in great/ɡreɪt/) and (programmer/ɡroʊˈkrɛmər/).

Subjects showed 60% of errors in first test and 40% in second test, an improvement of 20 percentage points.

**Summary (/g/ , /gr/):**

In clusters, /g/ is replaced with /k/ 40% in all positions as in grey, but only 10% before /l/ when it is in final position in haggle. /k/ is also replaced 15% with S.V. /ʃ/ as in gloss, and 10% with /b/ in haggle. /l/ is replaced in final position 50% with /ʃ/, 10% with /ʃ/ and 10% with /ɔː/ as in haggle. It is over-pronounced 10% as /kɡr/ in agree.

/dʒ/ (2 examples in trudged, dodged around):

E.C.1 (part omission ab→a) occurs 30% as /dʒ/ (in dodged around /ˈdɒdʒərʌnd/) in first test and 20% in second test.

10% as /dʒ/ (in trudged /tʃadʒ/) in both tests.
(ab→cb) 10% as /d/ (in dodged around /dɔdʒəraʊn/) in first test.

E.C.3(part over-articulation ab→c) occurs 10% as /dʒət/ (in trudged  /tʃadʒət/) and
10% as /dʒət/ (in dodged around /dɔdʒəraʊnt/) in first test.

E.C.4(part replacement ab→cb) occurs 20% as /tʃt/ (in trudged  /trætʃt/) in first test and
10% in second test.
10% as /tʃt/ (dodged around /dɔtʃəraʊnt/) in both tests.

E.C.4(replacement ab→cd) occurs 10% as /ɡəd/ (in dodged around /dɡədarəʊnt/) in second test.
10% as /kt/ (in trudged /trokt/),
10% as /ɡoː/ (in trudged /trəɡoː/),
10% as /kŋ/ (in trudged /trəŋ/),
10% as /ɡəs/ (in dodged around /dɡəsarəʊnt/),
10% as /ɡi/ (in dodged around /dɡəraʊnt/) and
10% as /kr/ (in trudged /dɾəkt/) in first test.
10% as /ɡt/ (in trudged /dɾækt/),

155
10% as /st/ (in trudged/trast/) and
10% as /tszʔ/ (in trudged
/trtːtszʔ/) in second test.

E.C.9 (omission and replacement ab→c) occurs
20% as /tʃ/ (in dodged around
dotʃəraun/) in first test and
10% in second test.
10% as /tʃ/ (in trudged
/trtʃ/) in second test.
10% as /g/ (in dodged around
dogəraun/) in both tests.
10% as /k/ (in trudged/tʃak/) in second test.

E.C.11 (over-articulation and omission ab→a) occurs
10% as /dʒʔ/ (in trudged
dʒadʒʔ/) in second test.

E.C.12 (replacement and over-articulation ab→cb) occurs
10% as /dəzda/ (in trudged
/tɾədəzəda/) in first test.

Subjects showed 100% of errors in first test and 80% in second test, an improvement of 20 percentage points.

Summary (/dʒd/):
/dʒd/ is extremely difficult for S.V. speakers, having 100% of odd errors. Final /d/ is omitted 45% as in dodged and has
20% of over-articulations as /dʒt/ in trudged. /t/ replaces /d/ 25% as in dodged and /k/ replaces /dʒ/ 40% in trudged. /dʒ/ is also replaced 20% with /g/ as in dodged and 10% with /d/ as in dodged. Final /d/ is replaced 10% with /ɔ:/ and /I/ in trudged.

/ft/

Word lists (2 examples in crafty, lift):
E.C.1(part omission ab→a) occurs 10% as /f/ (in crafty /kræftɪ/) and
10% as /f/ (in lift /lɪf/) in second test.
(ab→b) 10% as /t/ (in lift /lɛt/) in first test.
E.C.4(part replacement ab→cb) occurs 10% as /pt/ (in lift/lɪpt/) in first test.

Subjects showed 15% of errors in first test and 10% in second test, an improvement of 5 percentage points.
See summary below under /fr/.

/fr/

Word lists (2 examples in fifth and fifth on):
E.C.1(part omission ab→a) occurs 40% as /f/ (in fifth on /fɪfθn/) in first test and
10% in second test.
10% as /f/ (in fifth /fɪf/)
in both tests.

E.C.4(part replacement ab/ac) occurs 20% as /ft/ (in fifth /fift/) in first test and 10% in second test. 10% as /ft/ (in fifth on /fiftoon/) in both tests.

Subjects showed 35% of errors in first test and 20% in second test, an improvement of 15 percentage points. See summary below under /fr/.

/fs/

Word lists (2 examples in laughs, coughs at):
E.C.1(part omission ab>b) occurs 30% as /s/ (in coughs at /kɔʃt/ in first test and 10% in second test.
(ab>a) 10% as /f/ (in coughs at /kɔʃt/) in both tests and 10% as /f/ (in laughs /
laːf/) in second test.

E.C.4(part replacement ab>cb) occurs 10% as /vs/ (in laughs /laːv/) in second test.

Subjects showed 15% of errors in first test and 20% in second test, a regression of 5 percentage points. See summary below under /fr/.
Conversations:
E.C.4(part replacement ab→cb) occurs as /sl/ (in flat /sflt/).

See summary below under /fr/.

Conversations:
E.C.1(part omission ab→a) occurs as /f/ (in friendly /fenli:/).

Summary (/ft/, /fθ/, /fs/, /fl/, /fr/):
/f/ is omitted before /s/ 30% in coughs at and 10% before /t/ in lift. /f/ is replaced with /v/ 10% in laughs, with /p/ 10% in lift and with /s/ in flat, in conversation. The letter following /f/ is omitted 25% in fifth, 10% in laughs and in friendly, in conversation. Following /f/, /θ/ becomes /θt/ 20% in fifth.

/vd/

Word lists (2 examples in loved, moved over):
E.C.3(over-articulation ab→abc) occurs 10% as /vdθ/ (in moved over /muvdouvθ/) and
10% as /vdθ/ (in loved /lavθ/) in first test.
E.C.7(misreading ab→acd) occurs 10% as /vθt/ (in loved /lavθt/) in second test.
E.C.4(part replacement ab→cd) occurs 60% as /ft/ (in loved/laft/) in both tests.
30% as /ft/ (in moved over /mvftovv/) in first test and 20% in second test.

Subjects showed 75% of errors in first test and 45% in second test, an improvement of 30 percentage points. See summary below under /vz/.

/vz/

Word lists (2 examples in moves, leaves on):
E.C.1(part omission ab→a) occurs 20% as /v/ (in moves /mv/) 10% as /v/ (in lives on /liv/) (ab→b) 10% as /z/ (in moves /mz/) in second test.
E.C.4(part replacement ab→cb) occurs 10% as /fs/ (in lives on /lis/) in first test.
E.C.4(replacement ab→cd) occurs 40% as /fs/ (in moves /mu/fs/) in first test and 20% in second test.
20% as /fs/ (in leaves on /lifs/) in first test and 30% in second test.
E.C.7(misreading ab→acd) occurs 10% as /vəs/ (in moves /muvəs/) in second test.
E.C.9 (omission and replacement ab→c) occurs

10% as /f/ (in moves /mʌf/)  
10% as /f/ (in leaves on/laɪfən/)  
in first test.

E.C.11 (omission and over-articulation ab→bc) occurs

10% as /zæ/ (in moves /mʌzæ/)  
in both tests.

Subjects showed 50% of errors in first test and 55% of errors in second test, a regression of 5 percentage points.

Summary (/vd/, /vz/):

/v/ becomes /f/ 50% in all words and is omitted 20% in moves.  
/d/ becomes /t/ 55%, /f/ is omitted 20% and /d/ is over articulated 10% in moved over. /d/ is misread 10% in loved and moves.

/θt/

Word lists (2 examples in bathed, both turned):

E.C.1 (part omission ab→a) occurs 20% as /θ/ (in bathed /baθ/)  
in first test and 40% in second test.  
(ab→b) 20% as /t/ (in bathed /baθt/)  
in first test and 10% in second test.  
20% as /t/ (both turned /baθtənə/) in first test.
E.C.3 (part over-articulation ab→acb) occurs 10% as /ɔt/ (in both
turned
/ˈbou̯tɜːnd/) in second test.

E.C.11 (omission and over-articulation ab→c) occurs
10% as /æ/ (in bathed /bæθ/) in second test.

Subjects showed 30% of errors in first test and 35% of errors
in second test, a regression of 5 percentage points.
See summary below under /ɔr/.

/ɔs/

Word lists (2 examples in baths baths a):

E.C.1 (part omission ab→b) occurs 20% as /s/ (in bathes /baːs/) and
40% as /s/ (in bathes a /baːsa/) in first test.

10% as /æ/ (in bathes /baː/) and
20% as /æ/ (in bathes a /baːa/) in both tests.

E.C.4 (part replacement ab→cb) occurs 10% as /fs/ (in baths
/ˈbaːfs/) in first test.

E.C.9 (omission and replacement ab→c) occurs
10% as /t/ (in baths /bɛt/) in both tests.

10% as /t/ (in bathed a
/baːtə/) in first test.
E.C.11 (omission and over-articulation ab→a) occurs
10% as /ʃ/ (in bathed a /
/ˈbæθd a/) in second test.

Subjects showed 60% of errors in first test and 25% in second test, an improvement of 35 percentage points.
See summary below under /ʃr/.

/ʃr/

Conversations:
E.C.4 (part replacement ab→cb) occurs as /tr/ (in three /ˈtriː/),
five times.

Summary (/ʃt/, /ʃs/, /ʃr/):
/ʃ/ is omitted 30% as in baths, is replaced with /t/ 20% as in bathed, replaced with /ʃ/ 10% in baths and replaced with /ʃ/ 5% in bathed. /s/ is omitted 25% as in baths and /t/ is omitted 20% as in bathed. Final /t/ becomes /ʃ/ 10% as in bathed.

/ʃd/

Word lists (2 examples in loathed, clothed us):
E.C.1 (part omission ab→b) occurs 10% as /d/ (in loathed /ˈloʊd/) in first test and
10% as /d/ (in clothed us /
/ˈklothd əs/) in second test.
(ab→a) 10% as /ʃ/ (in loathed /ˈloʊd/) in second test.
E.C.4 (replacement ab→c) occurs 30% as /θt/ (in loathed /loudθ/) in first test and
50% in second test.
20% as /st/ (in clothed us /klowstas/) in both tests.
20% as /ʃs/ (in clothed us /kluʃzas/) in first test and
10% in second test.
10% as /t/ (in clothed us /klɔtəs/) in first test and
40% in second test.
10% as /k-ət/ (in clothed us /kluɔk-ətəs/) in first test.

E.C.4 (part replacement ab→ac) occurs 10% as /ʃtʃ/ (in clothed us /klɔʃəs/) in both tests.
10% as /ʃʃ/ (in loathed /lɔʃʃ/) in first test.

E.C.9 (omission and replacement ab→c) occurs
30% as /θ/ (in loathed /louθ/) in first test and
20% in second test.
10% as /θ/ (in clothed us /klouθas/) in first test.
10% as /t/ (in loathed /lɔt/) in both tests.

E.C.11 (omission and over-articulation ab→b)
20% as /dθ/ (in loathed /loudθ/)
in first test.

Subjects showed 90% of errors in both tests.
See summary below under /ʒz/.

/ʒz/

Word lists (2 examples in bathes and bathes in):
E.C.1(part omission ab→b) occurs 10% as /ʒ/ (in bathes in
/berzin/) in both tests.
(ab→a) 10% as /ʒ/ (in bathes /berʃ/) in second test.

E.C.4(part replacement ab→cb) occurs 10% as /dz/ (in bathes in
/bedzin/) in first test.

E.C.4(replacement ab→cd) occurs 40% as /ʃs/ (in bathes/berʃs/) in first test and
20% in second test.
20% as /ʃs/ (in bathes in
/berʃsin/) in first test and
30% in second test.
10% as /ʃt/ (in bathed /berʃt/) in second test.

E.C.7(misreading ab→acb) occurs 20% as /ʒz/(in bathes /berʒʒz/)
(ab→cde) 10% as /ʃʃs/ (in bathes in
/berʃʃsin/) in first test and
30% in second test.
10% as /ʃʃs/ (in bathes
/berʃʃʃ/) in second test.

165
E.C.9 (omission and replacement ab*c) occurs

20% as /ɔ/ (in bathes /ˈbaːθəs/) in first test.
10% as /s/ (in bathes /ˈbæθəz/) in second test.
20% as /s/ (in bashes in /ˈbæʃəz/) in first test and
10% in second test.
10% as /ɔ/ (in bashes in /ˈbæʃəz/) in first test and
10% as /z/, /ˈbaːtrəz/ in second test.

Subjects showed 85% of errors in first test and 70% in second test, an improvement of 15 percentage points.

Summary (/ʌd, /ɔz/):

/ɔ/ is omitted 20% and /ʌd/ is replaced with /d/ 13% as in loathed. It is also replaced 15% with /s/ and with /ɔ/ as in bathes. Final /t/ is omitted 30%, replaced with /d/ 40% and with /ɔ/ 20% as in loathed. Final /z/ is omitted 20%, replaced with /s/ 50% and with /t/ 5% as in bathes.

/sp/

Word lists (3 examples in speak, aspire, gasp):

E.C.1 (part omission ab*b) occurs 20% as /p/ (in gasp /ɡɛp/) in first test.
E.C.3 (over-articulation ab*abc) occurs 10% as /sp* / (in gasp
/gæspɛ/ in first test.

E.C.6 (extra phoneme ab→bab) occurs 10% as /psp/ (in gæspɛgɛpsɛ) in second test.

E.C.8 (permutation ab→ba) occurs 20% as /ps/ (in gæsp gɛpsɛ) in first test and 40% in second test.

Subjects showed 17% of errors in both tests.

/st/

Word lists (3 examples in stand, master, fast):
E.C.3 (over-articulation ab→abc) occurs 20% as /stʃ/ (in fast fæ:stʃ) in first test.

Conversations:
E.C.1 (omission) occurs (in least /liːʃ/), twice and (in postcode /pəʊkəʊd/).
E.C.1 (part omission ab→a) occurs as /s/ (in least /liːʃ/) seven times,
    (in just /ʤæs/) twice,
    (in first /fiːʃ/),
    (in last /laːʃ/) and
    (in most /mɔːʃ/) (ab→b) /t/ (in interesting /ɪnˈtɜːrəstɪŋ/).
E.C.4 (part replacement ab→ac) occurs as /ʃ/ (in question /ˈkwestʃən/).
Subjects showed 7% of errors in first test and none in second test, an improvement of 7 percentage points. See summary below under /sw/.

/sk/

Word lists (3 examples in sky, busker, ask):
No replacements recorded.

Conversations:
E.C.1(part omission ab→a) occurs as /s/ (in ask [aːs/]), twice.

Subjects showed no errors in tests.
See summary below under /sw/.

/sm/

Word lists (3 examples in smile, asthma, possum):
No replacements recorded.

Subjects showed no errors in tests.
See summary below under /sw/.

/sn/

Word lists (3 examples in sniff, asnare, bosun):
No replacements recorded.

Subjects showed no errors in tests.
See summary below under /sw/.

/sw/

*Word lists* (2 examples in *switch*, *dissuade*):

E.C.4 (part replacement ab→ac) occurs 10% as /sv/ (in *dissuade*

/daiv/ and

10% as /sv/ (in *dissuade*

/daiver/) in first test.

Subjects showed 10% of errors in first test and no errors in second test, an improvement of 10 percentage points.

*Summary* (/sp/, /st/, /sk/, /sm/, /sn/, /sw/):

In /sp/ there is a 20% omission of /s/, a 20% permutation of /s/ and /p/ and 10% replacements with /sp/ and /psp/ in *gasp*, but not elsewhere. In /st/, there is a 10% replacement of /st/ in *fast* in word lists and odd replacements of /t/ in *interesting* and replacement of /s/ as well as an omission in *least*, in conversations. /k/ is omitted in /sk/ *ask* in conversations, and in word lists /sw/ is replaced 10% with /v/ and /v/ in *dissuade*.

/zd/

*Word lists* (2 replacements in *Mazda, dozed*):

E.C.1 (part omission ab→b) occurs 20% as /d/ (in *Mazda* /maˈdæ/) in first test and

10% in second test.
10% as /z/ (in dozed /dovz/) in first test and
30% in second test.

E.C.4 (part replacement ab→cb) occurs 40% as /sd/ (in Mazda /mæsda/) in first
test and
50% in second test.

E.C.4 (replacement ab→cd) occurs 30% as /st/ (in dozed /doust/),
10% as /st/ (in Mazda /masta/) in first test and
20% in second test.

E.C.6 (added phoneme ab→acb) occurs 10% as /znd/ (in dozed
/dovznd/) in both tests.

E.C.9 (omission and replacement ab→c) occurs
10% as /t/ (in dozed /dovt/) and
10% as /n/ (in dozed /dən/) in first test.

E.C.13 (replacement and added phoneme ab→cdb) occurs
10% as /kṣd/, /məksda/ in first
test and
10% as /tsd/, /mətsda/ in
second test.

Subjects showed 75% of errors in first test and 65% in second
test, an improvement of 10 percentage points.

See summary below under /zn/.
/zm/

Word lists (3 examples in cosmos, chasm, excuse me):

E.C.1 (part omission ab→b) occurs 20\% as /m/ (in chasm /ˈkɒməs/) in both tests.

E.C.1 (omission) occurs 10\% (in chasm /ˈtʃaːm/) in second test.

E.C.4 (part replacement ab→cb) occurs 80\% as /sm/ (in cosmos /ˈkɒsməs/) in both tests.

60\% as /sm/ (in excuse me /ɪkˈskrɪvmiː/) in first test and

40\% in second test.

30\% as /sm/ (in chasm /ˈtʃæsm/) in both tests.

E.C.4 (replacement ab→cd) occurs 10\% as /sp/ (in chasm /ˈtʃæsp/) in first test.

E.C.8 (permutation ab→ba) occurs 30\% as /ms/ (in chasm /ˈtʃæms/) in first test and

20\% in second test.

E.C.9 (replacement and omission ab→c) occurs

10\% as /s/ (in chasm /ˈtʃæs/) in first test.

Subjects showed 77\% of errors in first test and 67\% in second test, an improvement of 10 percentage points.

See summary below under /zn/.
Word lists (2 examples in business, poison):
E.C.4(part replacement ab→cb) occurs 60% as /sn/ (in poison
\[\text{[pɔrsn]}\) in first
test and
50% in second test.
20% as /sn/ (in business
\[\text{[bɪsnɛs]}\) in first
test and
10% in second test.
E.C.13(replacement and added phoneme ab→cdb) occurs
10% as /s:n/ (in business
\[\text{[bɪsɛns]}\) in both tests.

Subjects showed 45% of errors in first test and 35% in second
test, an improvement of 10 percentage points.

Summary (/zd/, /zm/, /zn/):
In all clusters, /s/ replaces /z/ 53% and is omitted 25% in
/zd/ and /zm/ as in dozed and cosmos. /z/ is also replaced
10% with /ts/ and /ks/ in Mazda. /d/ becomes /t/ 10% as in
Mazda. /zd/ is replaced with /n/ 10% and /n/ is added 10%
in dozed. /m/ is omitted 10% and replaced with /p/ 10% in
chasm.

ʃr/

Word lists (2 examples in shriek, ashram):
E.C.1(part omission ab→a) occurs 20% as /ʃ/ (in shriek ʃɪk) and
20% as $\tilde{\jmath}$ (in _ashram/_ashram_ and _am_/am_) in first test.

E.C.4 (part replacement ab→cb) occurs 10% as /sr/ (in _shriek_/shriek) in both tests.

10% as /sr/ (in _ashram_/ashram) in both tests.

(ab→ac) 10% as $\tilde{\jmath}^{\tilde{\jmath}}$ (in _ashram/_ashram) in first test.

10% as /w/ (in _shriek_/shriek) in second test.

E.C.4 (replacement ab→cd) occurs 10% as /sf/ (in _shriek_/shriek) in first test and

10% as /sʃ/ (in _ashram/_ashram),

10% as /sʃ/ (in _ashram/_ashram),

10% as /sw/ (in _shriek_/shriek) in first test and

10% as /sl/ (in _shriek_/shriek) in second test.

E.C.9 (replacement and omission ab→c) occurs

10% as $\tilde{\jmath}^{\tilde{\jmath}}$ (in _ashram/_ashram) in second test.

E.C.13 (replacement and added phoneme ab→cdb) occurs

10% as /skr/ (in _shriek_/shriek) in second test.

Subjects showed 55% of errors in first test and 30% in second test, an improvement of 25 percentage points.
Summary (/ʃz/):

/r/ is replaced with /s/ 25% and with /ʃ/ 10% as in ashram. /r/ is omitted 20%, replaced with /ɛ/ 15% and replaced with /l/ 10% as in ashram. /r/ is replaced with /w/ 20% and has a phoneme added 10% as /kr/ in shriek.

/nt/

Word lists (2 examples in pointed, don't):

E.C.1(partial omission ab→b) occurs 20% as /t/ (in pointed /pɔrtgɔd/) in first test and 10% in second test.

E.C.9(omission and replacement ab→c) occurs 10% as /d/ (in pointed /pɔrdgɔd/) in first test.

Conversations:

E.C.1(part omission ab→b) occurs as /t/ (in ninety /ˈnɑːtɪ/ and (ab→a) /n/ (in improvement /ɪmprəʊvmen/) and currently /kərɛnli/) and (can't /kaːn/).

E.C.1(omission) occurs (in can't /ˈkæn/) and (ninety /ˈnɪnti/).

Subjects showed 15% of errors in first test and 10% in second test, an improvement of 5 percentage points.

See summary below under /ni/.
/ntʃ/  

Word lists (2 examples in launcher and paunch):

E.C.1 (part omission ab→b) occurs 30% as /tʃ/ (in paunch /bəntʃ/) in first test and
10% in second test.

10% as /tʃ/ (in launcher /ləntʃ/) in second test.

E.C.4 (part replacement ab→ac) occurs 20% as /ndʒ/ (in launcher /lɔːndʒ/) in first test.

E.C.9 (omission and replacement ab→c) occurs

10% as /dʒ/ (in launcher /lædʒ/) in both tests.

E.C.13 (added phoneme and part replacement ab→acd) occurs

10% as /ntʃ/ (in paunch /pəntʃ/) in first test.

Subjects showed 40% of errors in first test and 15% in second test, an improvement of 25 percentage points.

See summary below under /nl/.  

/nd/  

E.C.1 (part omission ab→a) occurs 10% as /n/ (in pond /pən/) in both tests.

E.C.3 (part over-articulation ab→abc) occurs 10% as /ndʒ/ (in pond /pəndʒ/) in first test.

E.C.4 (part replacement ab→ac) occurs 30% as /nt/ (pond /pənt/) in first test and
20% in second test.

Conversations:
E.C.1(omission) occurs (in find /fænd/), twice,
(end /e/) and
(understand /ʌndəstʊd/).

E.C.1(part omission ab→a) occurs
   as /n/ (in friend /frend/), 4 times,
   (understand /ʌndəstʊnd/) twice,
   (understand /ʌndəstʌnd/) twice and
   (ab→b) as /t/ (in sound /sɒnt/).

E.C.9(Part omission and replacement ab→c) occurs
   as /ŋ/ (in understand /ʌndəstʊd/).

Subjects showed 20% of errors in first test and 15% in second test, an improvement of 5 percentage points.
See summary below under /ŋl/.

/ndʒ/  

Word lists (2 examples in stranger, change):
E.C.4(part replacement ab→ac) occurs 10% as /ntʃ/ (in stranger /strənʤ/),
40% as /ntʃ/ (in change /tʃənʤ/) in first test and
20% in second test.
10% as /ŋʃ/ (in change...
(tʃɛŋʃ/) in both tests.
E.C.7 (misreading ab→cd) occurs 10% as /ŋ/ (in stranger /strɛŋɡə/) and
(ab→c) 10% as /ŋ/ (in stranger /strɛŋɡə/) in first test.

Conversations:
E.C.3 (over-articulation ab→abc) occurs as /ndʒŋ/ (in arrange /ərɛndʒŋ/).
E.C.4 (part replacement ab→ac) occurs (in enjoy /enʤəri/).

Subjects showed 40% of errors in first test and 20% in second test, an improvement of 20 percentage points.
See summary below under /n1/.

/nθ/

Word lists (2 examples in menthol, tenth):
E.C.1 (part omission ab→a) occurs 10% as /n/ (in tenth /ten/) in first test and
20% in second test.
E.C.4 (part replacement ab→ac) occurs 40% as /nt/ (in menthol /mentɔl/) and
10% as /nt/ (in tenth/tent/) in both tests.
E.C.9 (part omission and replacement ab→c) occurs
10% as /t/ (in menthol /mentɔn/) in first test.
Subjects showed 35% of errors in both tests.
See summary below under /nl/.

/ns/

Word lists (2 examples in bouncer, once):

E.C.1 (part omission ab→b) occurs 70% as /s/ (in bouncer /bæs/) in first test and 30% in second test.

E.C.4 (part replacement ab→cb) occurs 10% as /ŋs/ (in bouncer /bʊŋs/) and 10% as /uːs/ (in bouncer /bʊuːs/) in second test.

E.C.9 (part omission and replacement ab→c) occurs 10% as /d/ (in bouncer /pæd/) in first test.

Subjects showed 50% of errors in first test and 20% in second test, an improvement of 30 percentage points.
See summary below under /nl/.

/nz/

E.C.4 (part replacement ab→ac) occurs 70% as /ns/ (in pansy /pænsi/) in first test and 30% in second test.

60% is /ns/ (in spoons
(spuːns/) in first test and 20% in second test.
10% as /ŋs/ (in spoons)
(spʊg/) in first test.

Subjects showed 70% of errors in first test and 25% in second test, an improvement of 45 percentage points.

/ŋl/

Conversations:
E.C.9 (part omission and replacement ab→c) occurs as /l/ (in only fulif), twice.

Summary (/nt/, /ntʃ/, /nd/, /ndʒ/, /nθ/, /nʃ/, /nz/, /nl/): /n/ is omitted 37% as in launcher and is misread as /ŋ/ 20% in stranger. /tʃ/ is hyper-corrected to /d / 10% in launcher and /dʒ/ becomes /tʃ/ 40% in change. /θ/ becomes /t/ 30% as in tenth and /n/ becomes /ŋ/ 20% as in once.

/ŋk/

Conversations:
E.C.1 (part omission ab→a) occurs as /ŋ/ (in think/tʃŋ/), twice. E.C.9 (omission and replacement ab→c) occurs as /n/ (in think tʃŋ).

See summary below under / l/.

179
Conversations:
E.C.6 (added phoneme ab→acb) occurs 10% as /ŋk/ (in English /ŋkliŋ/), twice.

Subjects showed 30% of errors in first test and none in second test, an improvement of 30 percentage points.

Summary (/ŋk/, /ŋl/):
/k/ is omitted in think and added to /ŋl/ in English in conversations.

Conversations:
E.C.1 (part omission ab→b) occurs as /p/ (in help /help/), twice.
E.C.4 (part replacement ab→cb) occurs as /vp/ (in help /hevp/)
seven times.

See summary below under /lf/.

Conversations:
E.C.1 (partial omission ab→c) occurs as /u/ (in difficult /ˈdɪfɪkəlt/).
(ab→b) occurs as /l/ (in difficult /ˈdɪfɪkəlt/).
See summary below under /lʃ/.

E.C.1(partial omission ab→a) occurs as /l/ (in myself/marsel/), six times.

Summary (/lp/, /lt/, /lʃ/).
/l/ is omitted or replaced with /u/ in help and difficult and final /t/ and /ʃ/ are omitted in difficult and myself in conversations.

Conversations.
E.C.1(partial replacement abc→dec) occurs as /k-dr/ (in electronics /elek-drənɪks/).

See summary below under /ksʃ/.

Word lists (2 examples in facts, contacts at):
E.C.1(partial omission abc→ac) occurs 70% as /ks/ (in contacts at /kontəksæt/) in first test and 20% in second test. 60% as /ks/ (in facts
(fɛks/) in first test and 20% in second test.

(abc→a) 10% as /k/ (in contacts at [kɔntrɛkats] in second test.

E.C.3 (over-articulation) occurs 10% as /k-t-s-/ (in facts [tʃ k-t-s-ʃ]) in first test.

E.C.6 (extra phoneme abc→adbc) occurs 10% as /kstʃ/ (in facts [fɛkstʃ]) in second test.

E.C.8 (permutation abc→acb) occurs 10% as /kstʃ/ (in contacts at [kɔntʃkstʃtʃ]) in second test.

E.C.11 (over-articulation and omission abc→ac) occurs 10% as /kʃs/ (in facts [fɛkʃs]) in first test.

Conversations:

E.C.1 (partial omission abc→c) occurs as /s/ (in subjects [sæbdʒes]),

(abc→b) as /t/ (in subjects [sæbdʒet]) and

(abc→ac) as /ks/ (in subjects [sæbdʒeks]).

E.C.1 (omission) occurs (in subjects [sæbdʒ]).

Subjects showed 75% of errors in first test and 40% in second
test, an improvement of 35 percentage points.
See summary below under /ksʃ/.

/ksʃ/

E.C.1 (partial omission abc→a) occurs 10% as /k/ (in sixth /sɪkʃ/) and 
10% as /k/ (in sixth again /sɪkʃæɡenʃ/) in first test.

(abc→ab) 10% as /ks/ (in sixth /sɪksʃ/) in first test and 
20% in second test.

(abc→bc) 20% as /sʃ/ (in sixth again /sɪsʃæɡenʃ/) and 
10% as /sʃ/ (in sixth /sɪsʃ/) in first test.

10% as /ks/ (in sixth again) 
in first test and 
20% in second test.

(abc→ac) 40% as /kʃ/ (in sixth /sɪkʃ/) and 
20% as /kʃ/ (in sixth again /sɪkʃæɡenʃ/) in 
second test.

E.C.4 (partial replacement abc→abd) occurs 10% as /kst/ (in sixth 
/sɪkʃtʃ/) and 
10% as /kst/ (in sixth again /sɪkʃtʃæɡenʃ/)
in second test.

E.C.9 (replacement and omission abc→d) occurs

30% as /t/ (in sixth/sit/) and
20% as /t/ (in sixth again
   /sitagen/) in first test.

(abc→db). 10% as /gs/ (in sixth/sigz/) in first test.

Subjects showed 70% of errors in first test and 60% in second
test, an improvement of 10 percentage points.

Summary (/ktr/, /kts/, /ksφ/):
/k/ is omitted 40% in sixth and also in subjects, in
   conversation. /t/ is omitted 65% as in facts. /s/ is omitted
   50%, /k/ is omitted 10% and /φ/ is omitted 8% as in sixth.
/t/ replaces /φ/ 10% and /ksφ/ becomes /t/ 25% as in sixth.

/spt/

Word lists (2 examples in gasped, gasped and):
E.C.1 (partial replacement abc→ab) occurs 20% as /sp/(in gasped
   /gs'zsp/) in first
test and
10% in second test.
20% as /sp/(in gasped
   and /gs'zspand/) in first test and
10% in second test.
(abc→bc) 20% as /pt/ (in gasped and /g ipt nd/) in both tests.
20% as /pt/(in gasped /g ipt/) in first test and
10% in second test.
(abc→ac) 10% as /st/ (in gasped /g st/) in first test.
E.C.4(partial replacement abc→adc) occurs 10% as /stt/ (in gasped /g stt/) in first test.
E.C.6(extra phoneme abc→abdc) occurs 10% as /spst/ (in gasped /g spst/) in first test.
E.C.8(permutation abc→bac) occurs 20% as /pst/ (in gasped and /g pst/) in first test.
10% in second test.
10% as /pst/ (in gasped /g pst/) in both tests.
E.C.11(over-articulation and omission abc→ab) occurs
10% as /sp/ (in gasped and /g sp nd/) in second test.
E.C.14(permutation and omission abc→ba) occurs
30% as /ps/(in gasped /g sp/) and
10% as /ps/(in gasped and /g sp nd/) in first test.
E.C.15 (permutation and replacement abc→bad) occurs
10% as /pst/ (in gasped/[gɛpst]) in both tests.
10% as /psp/ (in gasped/[gɛpsp]) in first test.

Subjects showed 85% of errors in first test and 45% in second test, an improvement of 40 percentage points.
See summary below under /skw/.

/sps/

E.C.1 (partial omission abc→bc) occurs 40% as /ps/ (in lisps a [lɪpsə]) in first test and
20% in second test.
30% as /ps/ (in gasps [gɛps]) in first test and
10% in second test.
(abc→ab) 10% as /sp/ (in lisps a [lɪpsə]) in second test.

E.C.4 (partial replacement abc→adc) occurs 10% as /sts/ (in gasps [gɛsts]) and
10% as /sts/ (in lisps a [lɪstsa]) in first test.

E.C.6 (extra phoneme abc→abdc) occurs 10% as /spts/ (in gasps [gɛspts]) and
(abc>abc) 10% as /pəps/ (in /lipsa/ in second test.
E.C.8(permutation abc>bab) occurs 10% as /pəps/ (in /gəps/ in first test.
E.C.9( omission and replacement abc→ad) occurs 10% as /st/ (in /lipsa/ in first test.

Subjects showed 55% of errors in first test and 30% in second test, an improvement of 25 percentage points. See summary below under /skw/.

/spl/

Word lists (2 examples in splash, display):
E.C.6(extra phoneme abc→adb) occurs 10% as /spɛp/ (in splash /spaɻ/ in first test.

Subjects showed 5% of errors in first test and no errors in second test, an improvement of 5 percentage points. See summary below under /skw/.

/spr/

Word lists (spread, aspray):
E.C.4(partial replacement abc→abd) occurs 20% as /spə/ (in spread /spred/) in both tests.
10% as /spə/ (in aspray

187
(spere/) in both tests.

E.C.6(extra phoneme abc→adbc) occurs 10% as /spr/ (in spread /spred/) in second test.

Subjects showed errors of 15% in first test and 20% in second test, a regression of 5 percentage points. See summary below under /skw/.

/sts/

Word lists (quests, tourists are):

E.C.1(partial omission abc→a) occurs 20% as /s/ (in tourists are /tvɔris/) both tests.

(abc→ab) 50% as /st/ (in quests /gest/) in first test and 20% in second test.

30% as /st/ (in tourists are /tvɔrist/) in first test and 20% in second test.

E.C.3(over-pronunciation) occurs 10% as /s-t-s-/ (in quests /ges-t-s-) in both tests.

Subjects showed 55% of errors in first test and 35% in second test, an improvement of 20 percentage points. See summary below under /skw/.
Word lists (2 examples in street, astride):

E.C.1 (part omission abc→ac) occurs 10% as /sr/ (in astride /əstrɪd/) in second test.

E.C.4 (partial replacement abc→dcb) occurs 10% as /ʃtr/ (in street /ʃtriːt/) in first test and 10% as /ʃtr/ (in astride /əstrɪʃ/) in second test.

Conversations:

E.C.4 (partial replacement abc→abd) occurs as /stʃ/ (in Australia /ˈstʃəliːa/), twice and as /stʃ/ (in street /ˈstʃiːt/).

E.C.9 (omission and replacement abc→ad) occurs as /stʃʃ/ (structure /ˈstʃəktʃiː/), twice and struggle /stʃəgl/).

(abc→dc) occurs as /ʃr/ (in Australia /ˈʃɛtʃɪliːa/)

(abc→d) occurs in Australia /ˈtʃɛtʃɪliːa/).

Subjects showed 10% of errors in first test and 5% of errors in second test, an improvement of 5 percentage points.
See summary below under /skw/.
Word lists (2 examples in \textit{whisked}, \textit{frisked her}):

E.C.1 (partial omission \textit{abc}→\textit{ac}) occurs 40\% as /st/ (in \textit{whisked} /\textipa{\textit{wiskt}}/) in first test and

20\% in second test.

40\% as /st/ (in \textit{frisked her} /\textipa{\textit{fr\'sth\_1}/}) in first test.

(\textit{abc}→\textit{ab}) 10\% as /sk/ (in \textit{whisked} /\textipa{\textit{wisk}/}) in first test.

10\% as /sk/ (in \textit{frisked her} /\textipa{\textit{fr\'skh\_3}/}) in first test.

(\textit{abc}→\textit{c}) 10\% as /t/ (in \textit{frisked her} /\textipa{\textit{fr\'th\_3}/}) in first test.

(\textit{abc}→\textit{a}) 10\% as /s/ (in \textit{frisked her} /\textipa{\textit{fr\'sh\_3}/}) in first test.

E.C.3 (partial over-articulation \textit{abc}→\textit{abde}) occurs 10\% as /skd\&/

(in \textit{whisked} /\textipa{\textit{wiskd\&}/}) in first test.

20\% as /sk\&t/ (in \textit{frisked her}/\textipa{\textit{fr\'sk\&t}/}) in first test and

10\% in second test.

E.C.12 (over-articulation and replacement \textit{abc}→\textit{acc}) occurs

10\% as /st-t-/ (in \textit{whisked} /\textipa{\textit{wistt}/})
in first test. 
10% as /st-t-/ (in frisked
her /frist-t-h3:/)
in second test.

(abc→abd) 10% as /sk8s/ (in whisked
/wisk8s/) in first test.

Subjects showed 80% of errors in first test and 20% in second
test, an improvement of 60 percentage points.
See summary below under /skw/.

/sks/

Word lists (2 examples in tasks, masks on):
E.C.1(partial omission abc→ab) occurs 10% as /sk/ (in masks on
/ma:skən/) in first
test and
20% in second test.

10% as /sk/ (in tasks
/ta:sk/) in both tests.

(abc→a) 20% as /s/ (in masks on
/ma:son/) in first test.

E.C.3(partial over-articulation) occurs 10% as /sk-s/ (in tasks
/ta:sk-s/) in first
test.

10% as /sk-s/ (in masks
on /ma:sk-sən/) in
first test.
E.C.4 (partial replacement abc→abd) occurs 10% as /skt/ (in
\textit{tasks/ta:skt/}) in first test.

E.C.6 (extra phoneme abc→abd¢c) occurs 10% as /skts/ (in \textit{tasks}
\textit{/ta:skts/}) in first test.

E.C.9 (omission and replacement abc→ad) occurs
10% as /s-t/ (in \textit{tasks}
\textit{/ta:s-t/}) in both tests.
10% as /st/ (in \textit{masks}
on \textit{/ma:st:n/}) in first test.

E.C.11 (over-articulation and omission abc→ab) occurs
20% as /s-k-/ (in \textit{masks}
on \textit{/ma:s-k-n/}) in first test.

E.C.16 (permutation and extra phoneme abc→badc) occurs
10% as /k-sts/ (in \textit{tasks}
\textit{/ta:sk-sts/}) in first test.

Subjects showed 60% of errors in first test and 20% in second
test, an improvement of 40 percentage points.

See summary below under /skw/.

/skr/

Word lists (2 examples in \textit{screw, describe}):
E.C.4 (partial replacement abc→abd) occurs 20% as /skr/ (in \textit{screw}
\textit{/skru:/}) in first
test and
10% in second test.
20% as /skr/ (in
describe[dekrəb])
in both tests.

Subjects showed 20% of errors in first test and 15% in second test, an improvement of 5 percentage points.
See summary below under /skw/.

/skw/

Word lists (squid, asquith):
E.C.1(partial omission abc+ac) occurs 10% as /sw/ (in asquith
/swit/) in first test.
(abc+bc) 10% as /kw/ (in asquith
/skw/) in both tests.
E.C.6(extra phoneme abc+babc) occurs 10% as /kskw/ (in asquith
/kskw/) in second test.

Subjects showed 20% of errors in both tests.

Summary (/spt/, /sps/, /spl/, /spr/, /sts/, /str/, /skt, /skw/,
/skr/, /skw/):

First /s/ is omitted 30% in gasped and in gasps, and final
/s/ is omitted 50% as in guests and 20% as in tasks. Final
/t/ is omitted 60% as in gasped and is over-articulated 30%
as in frisked. /k/ is omitted 60% in frisked and 5% as in
asquith. /s/ is added 10% as in gasped and in gasps, /sp/ is reversed 20% as in gasped and /t/ and /p/ are added 10% in gasps. S.V. /ʃ/ replaces /r/ 20% as in spread and describe, and /ʃ/ replaces /s/ 10% as in street as well as sometimes replacing /st/ as in Australia, in conversation.

/mpt/

Word lists (2 examples in prompted, prompt):
E.C.1(partial omission abc→c) occurs 10% as /t/ (in prompted /proʊt/) in first test.
(abc→b) 10% as /m/ (in prompted /proʊm/) in first test.

Subjects showed 10% of errors in first test and no errors in second test, an improvement of 10 percentage points.
See summary below under /mʃs/.

/mps/

Word lists (lumps, bumps it):
E.C.1(partial omission abc→ac) occurs 10% as /ms/ (in lumps /ləms/ in first test and 20% in second test.
20% as /ms/ (in bumps it /bams̩/) in second test.
(abc→ab) 10% as /mp/ (in bumps it /bam̩p/) in first test.

194
E.C.3 (partial over-articulation) occurs 10% as /mps-/ (in lumps /lamps-/) in first test.

E.C.4 (partial replacement abc→adc) occurs 10% as /mbs/ (in lumps /lambs/) in second test.

Subjects showed errors of 15% in first test and 20% in second test, a regression of 5 percentage points.

See summary below under /mfs/.

/mft/

Word lists (triumphed, triumphed again):

E.C.1 (partial omission abc→ab) occurs 20% as /mf/ (in triumphed /triamf/) in first test and

10% in second test.

30% as /mf/ (in triumphed again /triamfagen/) in first test and

20% in second test.

(abc→ac) 10% as /mt/ (in triumphed /triamt/) in both tests.

(abc→a) 10% as /m/ (in triumphed again /triamagen/) in first test and

20% in second test.
E.C.4 (partial replacement abc -> ade) occurs
10% as /mps/ (in triumphed /traı̊mpes/) in both tests.
(abc->adc) 10% as /mpt/ (in triumphed again/traramptagen/) in both tests.
10% as /mpt/ (in triumphed /traı̊mpt/) in second test.
(abc->abd) 10% as /mfı/ (in triumphed /traı̊mfıı/) in first test.
10% as /mfı/ (in triumphed again/traramfııgen/) in first test.
10% as /mvı̊/ (in triumphed /traramvı̊/) in first test.

E.C.8 (permutation abc -> bdac) occurs 10% as /fmt/ (in triumphed again/trarafıımtagen/) in second test.

E.C.15 (permutation and replacement abc -> bda) occurs
10% as /fım/ (in triumphed /trarafım/) in second test.

Subjects showed 65% of errors in first test and 50% in second test, an improvement of 15 percentage points.
See summary below under /mfs/.
Word lists (triumphs, triumphs again):

E.C.1(partial omission abc→ab) occurs 10% as /mf/ (in triumphs /traIamf/) in first test.

(abc→ac) 10% as /ms/ (in triumphs /traIams/) in second test.

10% as /ms/ (in triumphs again /traIams:agen/) in first test.

(abc→a) 10% as /m/ (in triumphs again /traIam:agen/) in both tests.

E.C.4(partial replacement abc→adc) occurs

40% as /mps/ (in triumphs /traIammps/) in first test and

10% in second test.

40% as /mps/ (in triumphs again /traIammps:agen/) in first test and

10% in second test.

E.C.6(added phoneme abc→abcd) occurs 10% as /mfst/ (in triumphs /traIamfst/) in first test.

10% as /mfst/ (in triumphs again /traIamfst:agen/)
in second test.

E.C.8 (permutation abc→bdac) occurs 10% as /fims/ (in triumphs [transplant]) in second test.

E.C.15 (permutation and replacement abc→adece) occurs
10% as /mptst/ (in triumphs again [transplantstage])
in second test.

Subjects showed 55% of errors in first test and 40% in second test, an improvement of 15 percentage points.

Summary (/mpt/, /mps/, /mft/, /mfs/):

/m/ is omitted 10% in prompted and /p/ is omitted 15% as in prompted and lumps. Final /s/ is omitted 5% as in triumphs and lumps, and final /t/ becomes /I/ in triumphed and prompted 10%. /f/ is omitted 15% and becomes /p/ 45% as in triumphs and triumphed.

/nst/

Word lists (2 examples in minced, convinced us).

E.C.1 (partial omission abc→ab) occurs 10% as /ns/ (in minced

/mins/) in first test.

20% as /ns/ (in convinced

us /konvinsas/) in first test and

10% in second test.

(abc→ac) 10% as /nt/ (in minced

198
(\mint/) in second test.

E.C.7(mis-reading abc→abd) occurs 10% as /nət/ (in convinced /kənvɛnzatʃ/) in first test.

E.C.9(replacement and omission abc→db) occurs 10% as /ɪz/ (in minced /ˈmɛnz/) in first test.

E.C.11(over-articulation and omission abc→abd) occurs 10% as /nsɡ/ (in minced /ˈmɪnsɡ/) in second test.

E.C.13(partial replacement and added phoneme abc→abdɛ) occurs 10% as /nsdn/ (in minced /ˈmɛnsdn/) in first test. 10% as /nsez/ (in minced /ˈmɪnsez/) in first test.

Subjects showed 35% of errors in first test and 20% in second test, an improvement of 15 percentage points.

See summary below under /nʊs/.

/ntw/

Word lists (1 example in entwine):

E.C.4(partial replacement abc→abd) occurs 10% as /ntr/ (entwine /ˈɛntraɪ/) in first test. (abc→adc) 10% as /ntʃw/ (in entwine /ˈɛntʃwɑr/>
both tests.

E.C.9 (omission and replacement abc→ad) occurs 10% as /tʃ/ (in entwine/entwain/) in first test.

Subjects showed 30% of errors in first test and 10% in second test, an improvement of 20 percentage points. See summary below under /nʃs/.

/nʃt/

Word lists (2 examples in punched and crunched it):

E.C.1 (partial omission abc→ab) occurs 40% as /nʃ/ (in punched /pantʃ/) in first test and 20% in second test.

20% as /nʃ/ (in crunched it /krantʃt/) in first test and 10% in second test.

(abc→ac) 10% as /nt/ (in punched /pant/) in first test.

10% as /nt/ (in crunched it /krantʃt/) in first test and 20% in second test.

E.C.3 (over-articulation abc→abde) occurs 10% as /nʃd/ (in crunched it
E.C.4 (partial omission abc→abd) occurs 20% as /ntʃʒ/ (in punched /pantʃʒ/) in first test and 10% in second test.

(abc→adc) 10% as /nst/ (in punched /panstʃ/ in second test.

10% as /mpt/ (in punched /pamptʃ/) in second test.

(abc→abd) 10% as /ntʃʒ/ (in crunched it /krantʃʒ/) in both tests.

Subjects showed 60% of errors in first test and 45% of errors in second test, an improvement of 15 percentage points.

See summary below under /nθəs/.

/ngl /

Word lists (1 example in englaze):

E.C.1 (partial omission abc→ac) occurs 10% as /nl/ (in englaze /enla:ʒ/) in first test.

E.C.4 (partial replacement abc→adc) occurs 20% as /nk1/ (in englaze /enkleɪz/) in first test and 10% in second test.
Subjects showed 30% of errors in first test and 10% in second test, an improvement of 20 percentage points.

See summary below under /ŋʃs/. 

/ŋkl/

Word lists (1 example in *enclose*):

E.C.4(partial replacement abc→adc) occurs

20% as /ŋɡlid/ (in *enclose* /ɪŋɡlɔʊs/) in both tests.

10% as /ŋkl/ (in *enclose* /enɡlɔʊs/) in first test.

E.C.3(partial over-pronunciation) occurs

10% as /nk-1/ (in *enclose* /enkl-əʊs/) in first test.

Subjects showed 40% of errors in first test and 20% in second test, an improvement of 20 percentage points.

See summary below under /ŋʃs/. 

/ŋtl/

Conversations:

E.C.1(partial replacement abc→bc) occurs as /tl/ (in *fluently* /fljuːˈetliː/).

See summary below under /ŋʃs/. 

202
/ndʒd/

Word lists (2 examples in lunged: lunged at):

E.C.1 (partial omission abc→ab) occurs 10% as /ndʒ/ (in lunged /landʒ/) in first test.

10% as /ndʒ/ (in lunged at /landʒtʃ/) in both tests.

E.C.4 (partial replacement abc→adc) occurs 10% as /ntʃt/ (in lunged /lantʃtʃ/) in first test and

30% in second test.

30% as /ntʃt/ (in lunged at /lantʃtʃ/) in first test and

10% in second test.

(abc→dec) 10% as /ŋst/ (in lunged /lŋstʃ/) in second test.

E.C.7 (mis-reading abc→dc) occurs 20% as /ŋt/ (in lunged /lŋtʃ/) in first test and

10% in second test.

20% as /ŋt/ (in lunged at /lŋtʃtʃ/) in both tests.

(abc→defc) 10% as /ŋgʃd/ (in lunged at /lŋgʃdʃtʃ/) in first test.

E.C.9 (omission and replacement abc→ad) occurs

30% as /ntʃ/ (in lunged /lantʃ/)
in first test and
20% in second test.
20% as /ntʃ/ (in lunged at
/lʌŋdʒ/). in both tests.
10% as /nt/ (in lunged /lʌŋdʒ/)
in first test.
10% as /nt/ (in lunged at
/lʌŋdʒtʃ/) in first test.
(abc→de) 10% as /ŋʃ/ (in lunged at
/lʌŋdʒʃ/) in first test.

E.C.17 (misreading and replacement abc→dge) occurs
10% as /ŋ ga/ (in lunged
/lʌŋdʒa/) in both tests.
(abc→de) 10% as /ŋ k/ (in lunged
/lʌŋk/) in first test.
10% as /ŋ k/ (in lunged at
/lʌŋkʃtʃ/) in second test.

Subjects showed 95% of errors in first test and 90% in second test, an improvement of 5 percentage points.

See summary below under /ŋʃs/.

/nŋʃs/

Word lists (2 examples in months, months ago):
E.C.1 (partial omission abc→ac) occurs 40% as /ns/ (in months
/mʌns/) in both tests.
50% as /ns/ (in months ago
/\textit{mansagov/}) in first
test and
20% in second test.

(abc→ab) 10% as /nθ/ (in months
/\textit{manθ/}) in both tests.

10% as /nθ/ (in months ago
/\textit{manθagov/}) in first
test.

(abc→ac) 10% as /nɔ/ (in months
/\textit{manɔ/}) in first test.

E.C.3 (over-articulation abc→abdc) occurs 10% as /nθs/ (in months
/\textit{manθs/}) in first test.

E.C.6 (added phoneme abc→abbc) occurs 10% as /nθθs/ (in months
/\textit{manθθs/}) in second test.

E.C.8 (permutation abc→acbc) occurs 10% as /nɔs/ (in months
/\textit{manɔs/}) in first test.

E.C.9 (omission and replacement abc→ad) occurs

10% as /nz/ (in months ago
/\textit{manzagov/}) in first test.

Subjects showed 80% of errors in first test and 60% in second
test, an improvement of 20 percentage points.

\textit{Summary} (/nst/, /utw/, /stʃt/, /nɡl/, /nkl/, /ntl/, /ndʒd/, /ŋs/):
/n/ is omitted 10% in \textit{eatwipe} and in \textit{fluently}, in conversation.
/n/ is omitted 10% in \textit{mimced} and final /t/ is omitted 30%
and replaced with /s/ 15% as in **crunched**. Final /d/ is omitted 40% as in **lunged**, and final /s/ is omitted 15% as in **months**. /g/ is omitted 30% in **englaze**, and /θ/ is omitted 55% as in **months**. /ndʒ/ is misread as /ŋʃ/ 40% and becomes /ntʃ/ 55%, as in **lunged**. /k/ becomes /g/ 20% in **enclose**.

/ŋkt/

**word lists** (banked, **thanked us**):

E.C.1(partial omission abc→ab) occurs 20% as /ŋk/ (in **banked**
/bŋk/) in first

test and
10% in second test.

E.C.3(over-articulation abc→abdc) occurs 10% as /ŋkt/ (in **banked**
/bŋkt/) in first test.

E.C.4(partial replacement abc→abd) occurs 10% as /ŋks/ (in
**banked** /bŋks/) in second test.
30% as /ŋks/ (in **thanked**
/ŋksas/) in
first test and
40% in second test.

E.C.9(replacement and omission abc→dc) occurs
10% as /nt/ (in **banked**
/ðnt/) in first

test.
10% as /nt/ (in **thanked**
/ðntag/) in
first test.

Subjects showed 40% of errors in first test and 25% in second test, an improvement of 15 percentage points. See summary below under /ŋkl/.

/ŋks/

Word lists (2 examples in sinks, sinks in):

E.C.1(partial omission abc→ac) occurs 10% as /ŋ s/ (in sinks /sŋs/) in both tests.

10% as /ŋ s/ (in sinks in /sŋsin/) in first test.

Subjects showed 10% of errors in first test and 5% in second test, an improvement of 5 percentage points.

Summary (/ŋkt/, /ŋks/):

/ŋ/ becomes /n/ 10%, final /d/ becomes /t/ 20% and is omitted 10% as in banked. /k/ is omitted 10% as in sinks.

/lpt/

E.C.1(partial omission abc→bc) occurs 20% as /pt/ (in helped /hɛpt/) in first test and 30% in second test.
20% as /pt/ (in helped us /heptas/) in both tests.

E.C.4 (partial replacement abc→dbc) occurs 40% as /upt/ (in helped /heupt/) in both tests.

30% as /upt/ (in helped us /heuptas/) in first test and 40% in second test.

10% as /upt/ (in helped /hempt/) in first test.

(abc→dec) 10% as /uft/ (in helped us /heuftas/) in both tests.

E.C.9 (partial replacement and omission abc→dc) occurs

10% as /ft/ (in helped /heft/) in first test.

10% as /mt/ (in helped us /hemtas/) in first test.

(abc→db) 10% as /up/ (in helped /heup/) in first test.

10% as /up/ (in helped /heup/) in both tests.
us /heuptas/

in first test.
10% as /vp/ (in helped
/hevp/) in second
test.

E.C.12(replacement and over-articulation abc→dbdc) occurs
10% as /ɒpt/ (in helped
us /hepertas/) in both tests.

Subjects showed 90% of errors in first test and 80% in second
test, an improvement of 10 percentage points.
See summary below under /lmz/.

/lps/

Word lists (2 examples in helps, helps us):
E.C.1(partial omission abc•bc) occurs 10% as /ps/ (in helps
/heps/) in both tests.
20% as /ps/ (in helps us
/helpsas/) in first
test and
10% in second test.

E.C.4(partial replacement abc→dbc) occurs
60% as /vs/ (in helps
/heups/) in first
test and
50% in second test.
60% as /ʌps/ (in helps us /heupsəs/) in first test and
40% in second test.

E.C.9 (partial replacement and omission abc⇒db) occurs
10% as /ʌp/ (in helps us /heupsə/) in both tests.

E.C.11 (omission and over-articulation abc⇒bdc) occurs
10% as /pəs/ (in helps /hepsə/) in both tests.
10% as /pas/ (in helps us /hepsə/) in second test.

Subjects showed 90% of errors in first test and 70% in second test, an improvement of 20 percentage points.

See summary below under /lmz/.

/lts/

Word lists (2 examples in cults, results are):
E.C.1 (partial omission abc⇒c) occurs 10% as /s/ (in cults /kæs/) in first test.
(abc⇒ab) 10% as /lt/ (in cults /kælt/) in second test.
(abc⇒ac) 10% as /ls/ (in results are /rɪsæləs/) in both tests.
E.C.4 (partial replacement abc→dbc) occurs

- 20% as /uts/ (in cults
  /kauts/) in both tests.
- 10% as /nts/ (in results are
  /ritisauts/) in both tests.
- 30% as /nts/ (in cults
  /kant/) in first test and
  20% in second test.
- 10% as /nts/ (in results are
  in first test.

E.C.6 (added phoneme abc→adbc) occurs 10% as /lats/ (in cults
  /kalts/) in second test.

E.C.9 (replacement and omission abc→db) occurs

- 10% as /ɔt/ (in cults/kɔt/) in first test.
- (abc→dc) 20% as /ɔs/ (in cults/kɔs/) in first test and
  10% in second test.
- 40% as /ɔs/ (in results are
  /ritisɔsa/) in first test and
  30% in second test.
- 10% as /rs/ (in results are
  /ritisars/) in first test.
- (abc→de) 10% as /u/ (in results
(rizav/) in both tests.

Subjects showed 90% of errors in first test and 65% in second test, an improvement of 25 percentage points. See summary below under /lmz/.

/lkt/

Word lists (2 examples in sulked, sulked in):

E.C.1 (partial omission abc→bc) occurs 40% as /kt/ (in sulked /sakt/) in first test and 10% in second test.

20% as /kt/ (in sulked in /saktin/) in first test.

(abc→b) 10% as /k/ (in sulked in /sakin/) in first test.

(abc→ab) 10% as /lk/ (in sulked /salk/) in second test.

E.C.4 (partial replacement abc→dbe) occurs

10% as /νks/ (in sulked /sauks/) in first test.

E.C.9 (omission and replacement abc→bd) occurs

10% as /ks/ (in sulked /soks/) in both tests.

10% as /ks/ (in sulked in /soksin/) in both tests.

(abc→dc) 10% as /nt/ (in sulked
(sant/) in first test.  
(abc-db) 10% as /u_k/ (in sulked
/sau_k/) in both tests.
10% as /u_k/ (in sulked in
/sau_k/in/) in first test.

E.C.12(replacement and over-articulation abc-dcc) occurs
10% as /u_t-t/ (in sulked in
/sau_t-tin/) in
first test.

(abc-dce) 10% as /n_t-t/ (in sulks in
/san_t-tin/) in first test.

(abc-dbe) 10% as /u_k-g/ (in sulks in
/sau_k-gin/) in both tests.

(abc-acde) 10% as /l_t-o/ (in sulked
in /sal-t-o-in/) in
second test.

Subjects showed 80% of errors in first test and 35% in second
test, an improvement of 45 percentage points.

See summary below under /lmz/.

/lks/

E.C.1(partial omission abc-bc) occurs 30% as /ks/ (in sulks
/saks/) in first
test and
10% in second test.
20% as /ks/ (in sulks in
\( \text{sinkin} \) in both tests.

(abc\*ac) 10% as /ls/ (in \text{sinkls}
\text{sals} \text{in}) in first test.

10% as /ls/ (in \text{sinkls in}
\text{salslin}) in both tests.

(abc\*ab) 10% as /lk/ (in \text{sinkls}
\text{salk} \text{in}) in second test.

(abc\*c) 10% as /s/ (in \text{sinkls}
\text{sas} \text{in}) in first test.

10% as /s/ (in \text{sinkls in}
\text{saslin}) in first test.

(abc\*b) 10% as /k/ (in \text{sinkls in}
\text{saklin}) in first test.

E.C.4 (partial replacement abc\*dbc) occurs 20% as /uks/ (in \text{sinkls}
\text{sauks} \text{in}) in first

test and

10% in second test.

10% as /uks/ (in \text{sinkls in}
\text{sauksin}) in first test.

10% as /uks/ (in \text{sinkls}
\text{sauks} \text{in}) in second test.

10% as /uks/ (in \text{sinkls in}
\text{sauksin}) in first test and

20% in second test.

(abc\*dec) 10% as /nts/ (in \text{sinkls}
(ants) in first test.

E.C.9 (replacement and omission abc→dc) occurs
10% as /s/ (in sulks
/sa=s/) in first test.
10% as /s/ (in sulks
/sa=sin/) in first test.
(abc→db) 10% as /uk/ (in sulks
/saukin/) in first test.

Subjects showed 90% of errors in first test and 50% in second test, an improvement of 40 percentage points.

See summary below under /lmz/.

/lθs/

Word lists (2 examples in healths, health sign):
E.C.1 (partial omission abc→ab) occurs 20% as /lθ/ (in healths
/heelθ/) in first test.
(abc→bc) 10% as /θs/ (in health sign
/heθsain/) in first test.

E.C.4 (partial replacement abc→dbc) occurs
30% as /uθs/ (in health
sign /heuθsain/) in
first test.
(abc→adc) 10% as /lθs/ (in healths
/heelθ/) in first test.
(abc→dbc) 10% as /nθs/ (in health
sign /henθsain/) in
second test.

E.C.7 (mis-reading abc→adec) occurs 10% as /lɪŋ/ (in healths
(heɪŋ) in second test.

E.C.9 (replacement and omission abc→db) occurs
20% as /nθ/ (in healths
(heɪŋ) in first test.
10% as /nθ/ (in healths
(heɪŋ) in first test.

(abc→dc) 10% as /vs/ (in healths
(heɪvs) in first test.
10% as /ws/ (in healths
(heɪəz) in first test.
10% as /ws/ (in healths
(heɪəz) in first test.

(abc→ad) 10% as /lt/ (in healths
(heɪlt) in first test.

Subjects showed 65% of errors in first test and 20% in second
test, an improvement of 45 percentage points.

See summary below under /lmz/.

/lst/

Word lists (2 examples in whilst and will stay):
E.C.1 (omission) occurs 10% (in whilst /wɪst/) in second test.
E.C.1 (partial omission abc→bc) occurs 30% as /st/ (in whilst
/wɪst/) in first test and
10% in second test.
10% as /st/ (in will stay /ˈwɪlst/) in both tests.

E.C.4 (partial replacement abc→bbc) occurs

60% as /vst/ (in will stay /ˈwɪvstə/) in first test and

30% in second test.

30% as /vrst/ (in whilst /ˈwɪlst/) in first test and

10% in second test.

10% as /qst/ (in whilst /ˈwɑːlst/) in second test.

10% as /nst/ (in whilst /ˈwɪnst/) in first test.

Subjects showed 70% of errors in first test and 45% in second test, an improvement of 25 percentage points.

See summary below under /lmz/.

/lmd/

Word lists (2 examples in filmed, filmed it):

E.C.1 (partial omission abc→b) occurs 30% as /m/ (in filmed /ˈfɪlm/) in first test.

10% as /m/ (in filmed it /ˈfɪlmɪt/) in first test.

(abc→bc) 10% as /md/ (in filmed
(fimd/) in second test.
E.C.4(partial replacement abc→dbe) occurs 30% as /ɔmt/ (in filmed
/ʃimt/) in both
tests.
30% as /ɔmt/ (in filmed
it /ʃimtʃt/) in
first test and
10% in second test.

E.C.9(omission and replacement abc→bd) occurs
50% as /mt/ (in filmed
/ʃmt/) in first test and
30% in second test.
40% as /mt/ (in filmed it
/ʃmtʃt/) in first
test and
30% in second test.
(abc→db) 10% as /ɔm/ (in filmed
/ʃim/) in first test.
(abc→bd) 10% as /mf/ (in filmed
it /ʃimʃt/) in both
tests.

Subjects showed 100% of errors in first test and 60% in second
test, an improvement of 40 percentage points.
See summary below under /lmz/. 

218
Word lists (2 examples in *films, films again*).

E.C.1 (partial omission abc→bd) occurs 50% as /ms/ (in *films* /fils/) in first test and 40% in second test.

50% as /ms/ (in *films again* /filsagens/) in first test and 40% in second test.

(abc→b) 10% as /n/ (in *films again* /filsagens/) in first test.

E.C.4 (partial replacement abc→dbc) occurs 20% as /gms/ (in *films* /fiɡms/) in first test and 30% in second test.

20% as /gms/ (in *films* /fiɡms/) in both tests.

Subjects showed 70% of errors in both tests.

Summary (/lpt, /lps, /lts, /lkt, /lks, /l̩s, /l̩st, /l̩md, /lmz):

/l/ is omitted 40% and becomes /r/ or /g/ 50%. It becomes /n/ 30% as in *culs* and 15% as in *helped* and *sulked*. /l/ also becomes /ŋ/ 10% in *sulks*, /v/ 10% in *helped*, /r/ 10% as in *results* and /w/ 5% as in *healths*. /l/ is over-pronounced 10% in *culs*. Final /s/ is omitted 30% as in *healths*, 25% in *sulks*,

219
5% as in *helps* and 5% in final /z/ as in *films*. Final /t/ is omitted 30% as in *filmed* and 10% as in *sulked*. Also, final /t/ becomes /s/ 10% as in *sulked* and is over-pronounced 5% in *helped*. /p/ is omitted 10% and becomes /f/ 10% in *helped*. 
CHAPTER 6

SUMMARY OF ENGLISH PRONOUNCED BY SOUTH VIETNAMESE.

6.0 Introduction

In summarising the phonemes pronounced by South Vietnamese speaking English, I have endeavored to explain the causes of the errors made. Errors resulting from first language interference can be considered from the viewpoint 'postulated correspondences' mentioned in chapter 4, as it is of some interest to find the extent of the accuracy of the predictions made. The detailed analysis of these phonemes is contained in chapter 5, so this section may appear to be somewhat repetitive. However, it has been written in order to enable greater ease of reading, and chapter 5 can be used for a more detailed reference when required.

Results of the first and second tests, recorded before and after the ten pronunciation lessons, plus a third identical test recorded six months later (with no further pronunciation lessons), are included. There are also some explanations as to the possible reasons for the different results in the improvement of each sound.
6.1 Vowels

/i:/
Most of the errors occur in medial position where /i:/ is shortened to /i/ (as in beat /bɛt/) 40-50%. This is due to first language interference as S.V. vowels are shortened when followed by a consonant (see p.46). Refer to predictions (p.47).

This phoneme showed significant and continuing improvements.

Errors in first test were 23%.
Errors in second test were 14%, an improvement of 39%.
Errors in third test were 9%, an improvement of 61%.

/ɪ/
There are very few errors in this phoneme which is very close to S.V. /i/. /ɪ/ was omitted (as in physical /ˈfɪzɪkəl/) 1-5% in medial position in words of three syllables. It is lengthened once in conversation as /i:/ (in system /sɪˈstɛm/), which is due to misunderstood orthography, as ɪ is pronounced as /i:/ in S.V. (see p.47).

Errors in first test were only 1%.
There were no errors in second or third tests, an improvement of 100%.

/e/
There are relatively few errors in this phoneme where /e/
is omitted 1-5% (as in *economics* /kənɒmɪs/) in conversation. In initial position it is misread medially as /ɪ/ (in *eleven* /ɪlɪvɛn/) and replaced with /ɛ/ (in *bet* /bɛt/) 15%.

There is a regression in the second test which is due to the misreading of *bet* as /bɪt/. However, there was an improvement in the third test.

Errors in first test were 4%.

Errors in second test regressed to 7%, a regression of 75%.

Errors in third test were 3%, an improvement of 25%.

/ɛ/

There are very few errors in this phoneme which is very close to the S.V. /ɛ/ (see p.50). It is replaced 1-5% with /ʌ/ (in *factors* /fæktəs/) and /ə/ (in *can* /kæn/) in medial position. Both of these errors are due to interference of the S.V. 'bound' vowels. There is a random initial replacement of /e/ (in *accents* /ɛksɛnts/).

Errors in first test were 2%.

Errors in second test were 1%, an improvement of 50%.

There were no errors in third test, an improvement of 100%.

/aː/

This phoneme is very close to S.V. /a/ so there is no interference (see p.50). There were no errors in conversations.
There were no errors in tests.

/a/
There are random errors only in conversations, mainly in the first interview. These are /ə:/ (in study /stədɪ/), /ɛ/ (in just /dʒʌst/), emulations of broad A.E. /ŋ/ (in sometimes /sʌmtaɪmz/) is caused by not stressing the first syllable and /æː/ (in once /waːns/) is due to S.V. interference of the longer /æ/ phoneme (see p.50). /ʊ/ (in subjects /sʌptʃəst/) and /ɔ/ (in tongue) are caused by misunderstood orthography.

There were no errors in tests.

/ɔ/ There are very few errors in this phoneme as there is a similar sound /ɔ/ in S.V. (see p.50). Errors are mainly due to random misreadings such as /ɛɪ/ (in apart /ərpaɪt/) and over-articulations (as in bathes /beɪθz/ and five /feɪv/) There are random omissions (as in address /dres/ and confident /kɔnfɪdent/) and replacement with /ɪ/ (in express /ɪksprɛs/) in conversations.

Errors in first test were 5%.
Errors in second test were 3%, an improvement of 40%.
There were no errors in third test, an improvement of 100%.
/3:/
Although this sound was predicted to be shortened to its nearest S.V. equivalent, it has very few errors (see p.50) and there are only random errors in both interviews. These include an omission in a three syllable word (difference /ˈdɪfərsiə/) and finally (in after /ˈaːftər/). The other errors occur when the vowel is shortened due to S.V. interference as /ɔ/ (in work /wɜːk/) and /ə/ (in working /ˈwɜːkin/).

There were no errors in tests.

/ɔ/ This phoneme is close to S.V. /ɔ/ and is not difficult to pronounce (see p.50). There are random errors in first interview including /ɔ/ (in electronics /ɪlekˈtrɒnɪks/) which is due to stressing the second syllable. It is also an extra phoneme (in first as /fɜːʃ/)..

There were no errors in tests.

/ɔː/ The closest S.V. equivalent to /ɔː/ is /ɔː/ (see p.51). The replacements in this phoneme are due to S.V. interference as predicted, and /ɔː/ is shortened to /ɔ/ (as in port /pɔrt/). In conversations, there is one replacement of /ɔ/ (in order /ˈɔrɪd/).

225
Errors in first test were 6%.
Errors in second test were 3%, an improvement of 50%.
Errors in third test were 2%, an improvement of 67%.

/u/
As /u/ is close to S.V. /u/ (see p.51), there is no apparent interference. It was replaced in reading tests with /j/ (in handful /hæntʃuʃ/). There were no errors in conversations. All errors were made by one subject only.

Errors in all tests were 5%, showing no improvement.

/u:/
This sound has some difficulties in tests where all errors are due to a shortening of /u:/ to /u/ (as in boot /bʊt/). This is due to interference of S.V. vowels which are shortened when followed by a consonant (see p.51). The same error also occurs in conversation (in Droop /drʊp/ ) in the first interview only.

Errors in first test were 15%.
Errors in second and third tests were 5%, an improvement of 67%.
6.2 Diphthongs

/aɪ/

This diphthong is not difficult for S.V. to pronounce. In tests it is shortened as in S.V. vowels followed by a consonant, to allophones of /a/ (as in time [təɪm]) (see p.51). It has random replacements in conversations of /ɔɪ/ (in fine [fɔɪn]), which is an emulation of broad A.E. and /ɪ/ (in prime [prɪm]), which is a misreading.

Errors in first test were 1%.
Errors in second test were 2%, a regression of 50%.
Errors in third test were 1%, showing no improvement.

/eɪ/

This diphthong has no correspondence in S.V. and has many replacements, especially in medial position where it has 50% of errors in tests (see p.52). It is most often shortened to /ɛ/ (as in make [mɛk]). However, there are other replacements such as shortened /ə/ (in take [tək]), /a/ (in aquainted [əkwantəd]). When /eɪ/ is not followed by a consonant, it is approximated with S.V. diphthongs /aj/, /ɛj/ and /eɪ/ (as in may [meɪ], ɛmɛy and /meɪ/). This diphthong showed significant and continued improvement.

Errors in first test were 21%.
Errors in second test were 12%, an improvement of 43%.
Errors in third test were 3%, an improvement of 86%.
/ɔi/

This diphthong is not difficult for S.V. speakers as it corresponds with the S.V. diphthong /ɔj/ (see p.52). There were no errors in conversations.

There were no errors in tests.

/ɔu/

This diphthong is not difficult for S.V. speakers and is relatively easily corrected (see p.52). It has odd replacements of /ɔ:/, /ɔ/, ɔ+ and /ɔu/ (in bough /boʊ/, bɔ, bɔ+ and /boʊ/) which I see as reading errors. There is also an odd replacement of /a:/ (in now /naʊ/) in conversations.

Errors in first test were 10%.
Errors in second test were 9%, an improvement of 10%.
Errors in third test were 4%, an improvement of 60%.

/ɔʊ/

This diphthong does not correspond to S.V. (see p.52). It is shortened to /ɔ/ (as in only /ˈɒnli/) 10% in first test, which I see as a reading error. It is also replaced with /au/ (in although /ɔləu/) which I see as an emulation of broad A.E. which, however, does not sound appropriate for an educated speaker. The same replacements, plus shortened S.V. /e/ (in hope /həʊ/), occur in conversations. This diphthong is not difficult to correct with instruction.
Errors in first test were 15%.
Errors in second test were 1%, an improvement of 93%.
There were no errors in third test, an improvement of 100%.

/ɪɡ/
This diphthong is not difficult for S.V. speakers to pronounce as it corresponds with S.V. diphthong /ɪɡ/ (see p.52), which can also be followed by a consonant (see p.52). There were only a few shortened replacements in conversations such as /ə/ (in Australian /ˈɑːlərn/) and /i/ (in deal /diːl/).

There were no errors in tests.

/ɜːə/
This diphthong corresponds with S.V. so is not difficult to pronounce (see p.52). There were no replacements in conversations.

There were no errors in tests.

/ʊə/  
This diphthong corresponds with S.V., so is not difficult to pronounce (see p.53). There were no errors in conversations.

There were no errors in tests.
6.3 Consonants

/p/

There are very few errors in this phoneme, and most of these are replacements initially with the S.V. phone, /b/ (as in prove /bru:v/) as predicted (see p.54) because /b/ occurs initially in S.V. whereas /p/ occurs finally. It is also replaced with /b/ medially (as in apple /æp/ and as a hyper-correction (in cap /kæp/). Other random replacements are /t/ (in gasps /ga:stə/) and /f/ (in optics /ɔptɪks/). The only error occurring in conversation was /b/ (in people /ˈpipl/). There are occasional permutations in clusters (as in gasped /ˈgæsp/).

Errors in first test were 7%.

These occurred 9% initially, 6% medially and 5% finally.

Errors in second test were 1%, an improvement of 80%.

These occurred 2% initially and 11% medially.

There were no errors in third test, an improvement of 100%.

/b/

All replacements in this sound are /p/, occurring in all positions, but more so medially and finally as predicted (see p.54). There are random errors in clusters, as an extra phoneme (in lisps as /ˈlɪps/) and as a permutation (in absolve as /ˈæbsəlv/). It is sometimes omitted in conversations (as in number /ˈnaʊmə/) and replaced with the S.V. allophone /p/ which occurs in final position (as in job /dʒɒp/).
Errors in first test were 12%.
These occurred 1% initially, 16% medially and 20% finally.
Errors in second test were 4%, an improvement of 67%.
These occurred 2% initially and 11% medially.
Errors in third test were 4%, an improvement of 67%.
These occurred 1% initially, 7% medially and 3% finally.

/t/
This sound is not difficult to pronounce initially, but is over-articulated 6% as /d/ (as in tab /tæb/). This is a kind of hyper-correction as an unaspirated /t/ is pronounced initially in S.V. (see p.54). However, this phoneme is more difficult to pronounce in other positions, where it has several difficulties. It is replaced 4% medially with /d/ (as in better /ˈbedər/) and 1% finally (as in it /ɪt/). In clusters, there are 5% omissions medially (as in facts /fæks/) and 11% finally (as in minced /ˈmɪnsid/). It is replaced with /s/ and /z/ (as in sulked /ˈsʌlkid/ and minced /ˈmɪnsidz/) which are due to confusion with English verb endings. There are 5% of extra phonemes medially, some of which may also be seen as misreadings (as in fízz /ˈfɪz/) and 1% finally (as in helps /ˈhelpz/). There are also 1% of over-articulations in clusters, especially finally (as in marked /maːkt/) and occasional permutations in clusters (as in patsy /ˈpætsi/). In conversations, there are 5–10% omissions medially and 20–30% finally. There are 5–10% replacements with voiced /d/ medially and finally, and /s/ finally. There are occasional retracted articulations.
of /k/ (as in *bit* /bɪk-/) medially and finally.

Errors in first test were 14%.
These occurred 6% initially, 18% medially and 16% finally.
Errors in second test were 5%, an improvement of 64%.
These occurred 1% initially, 6% medially and 7% finally.
Errors in third test were 5%, an improvement of 64%.
These occurred 1% initially, 6% medially and 7% finally.

/ð/

This phoneme is not difficult initially as a single consonant (see p.56), but is very difficult in other positions, particularly in clusters. However, it does show significant improvements following instruction. It is released too softly initially 17% as /t/ (as in *droop* /drəʊp/) and omitted 3% (in *drink* /drɪŋk/). As /d/ does not exist in positions other than initial in S.V. and as clusters do not exist at all, it is omitted medially 44% (as in *adrift* /'aːdrift/) and finally 34% (as in *dodged* /dədʒ/). It is also pronounced too softly as its nearest phoneme /t/, which occurs finally in S.V., 17% medially (as in *handful* /'hændfl/) and 39% finally (as in *pad* /pæd/). It is unreleased medially 3% (as in *adder* /'ædər/) and has a replacement of /ʃ/ (in *filmed* /ˈfɪlmid/). The main errors in conversations are medial and final omissions of /ð/ and 5-10% of unvoiced replacement /t/, occurring in all positions.
Errors in first test were 43%.

These occurred 20% initially, 44% medially and 66% finally.

Errors in second test were 31%, an improvement of 28%.

These occurred 17% initially, 22% medially and 54% finally.

Errors in third test were 16%, an improvement of 63%.

These occurred 3% initially, 12% medially and 34% finally.

/k/

There are 18% of initial replacements. All are heard as /g/, which is because S.V. /k/ is less fronted than A.E. /k/ (see p. 57). /k/ is replaced in medial position only 3% with /g/ and unreleased 2% medially as retracted S.V. /k- / (in like /laɪk/) due to not being linked in reading --like age--. It is omitted 3% medially (as in coaxed /kəʊst/) and 6% finally (as in take /tæk/). It is an added phoneme 5% (as in shriek /skriːk/) and has occasional permutations (as in whisked /wɪkst/). In conversations /k/ has the same kind of errors as in tests as well as odd replacements of /j/ (in exact /ɛkˈsækt/) and /s/ (in talk /təːk/). This phoneme shows significant improvement following instruction.

Errors in first test were 14%.

These occurred 18% initially, 13% medially and 10% finally.

Errors in second test were 5%, an improvement of 64%.

These occurred 11% initially, 1% medially and 3% finally.

Errors in third test were 3%, an improvement of 79%.

These occurred 2% initially, 1% medially and 6% medially.

233
/g/

This phoneme presents significant difficulties for S.V. speakers, as their closest sounds are /k/ and /θ/ (see p.57). There are 18% of replacements with /k/ initially (as in gloss /klɔs/) and 28% medially (as in maggot /mekɔt/). Retracted S.V. /k/ occurs 2% medially in clusters (as in aglow /ək-lou/) and S.V. /θ/ occurs 13% initially (as in grey /gri/). /g/ is omitted finally 5% (as in gag /gæg/). The letter q is also misread as an extra phoneme 17% (as in singer /sɪŋgər/). /k/ is not omitted in conversations, but has similar problems otherwise, including S.V. /θ/ medially (in program /prəʊgræm/). Although there were significant improvements in the second test, these were not retained as well as some of the other consonants were, in the third test.

Errors in first test were 26%. These occurred 24% initially, 48% medially and 5% finally. Errors in second test were 12%, an improvement of 54%. These occurred 8% initially, 22% medially and 5% finally. Errors in third test were 18%, an improvement of 31%. These occurred 21% initially, 12% medially and 20% finally.

/tʃ/ is replaced with hyper-correction /ðʒ/ 10% initially (as in chat /chat/). This is interesting because /tʃ/ has a S.V. approximation /c/ in initial position (see p.57). There is 1% replacement medially with /t/ (as in watches /wɔts/)
and 10% replacement finally (as in match /mæt/). Other replacements in clusters are /s/ (as in pitched /pɪst/), /ʃ/ (as in watched /wɒtʃ/) and /p/ (as in punched /pʌmp/) . The only replacements for /tʃ/ in conversations are /ʃ/ (in much /mʌʃ/) and /s/ (in much /mʌs/). There is a regression in the second test due to an additional initial hyper-correction of /dʒ/ and a medial replacement of /p/ (in punched /pʌmp/). There is a significant improvement in the third test.

Errors in first test were 8%.

These occurred 10% initially, 5% medially and 10% finally.

Errors in second test were 12%, a regression of 33%.

These occurred 20% initially, 6% medially and 10% finally.

Errors in third test were 5%, an improvement of 38%.

These occurred 10% initially and 4% medially.

/dʒ/

Although this phoneme shows significant improvement following instruction, particularly in initial position where it is easier to voice, it is very difficult for S.V. speakers to pronounce as its nearest correspondence is unvoiced S.V. /c/ (see p.57). Most replacements are /tʃ/, especially in final position (as in large /laːtʃ/) where it accounts for 58% of the errors. There are many other replacements including /ʒ/ (as in magic /mæɡɪk/) which accounts for 6% of errors in all positions, /k/ (in trudged /trʌkt/) and /g/ (in trudged /drʌgt/) 30%, and over-pronunciations of /dʒ/ (as in age /edʒ/) and
/tʃ/ (as in badge /bætʃ/) 10% in final position. Also it has errors of /t-/ (as in trudged /trʌdʒd/), /s/ (as in lunged /lʌŋgd/), /z/ (in age /eɪz/) /ɹ/ (in age /eɪɹ/) omnissions (as in large /laɪz/) and misreadings of /dz/ (in age /zdʒ/) and /ɡ/ (as in lunged /lʌŋgd/). In conversations, the errors follow much the same pattern as they do in the tests.

Errors in first test were 40%.
These occurred 22% initially, 41% medially and 57% finally.

Errors in second test were 22%, an improvement of 45%.
These occurred 28% medially and 39% finally.

Errors in third test were 18%, an improvement of 55%.
These occurred 30% medially and 24% finally.

/f/
This phoneme occurs only initially in S.V. but has no errors initially or finally in first test, and very few medially (see p.57). It has 7% of omissions medially (as in coughs /kʌʃz/), 2% of replacements with /p/ (as in triumphs /traɪmʌps/) and is overarticulated as /v/ (in laughs /laːvz/). It is omitted medially (in fifteen /ˈfɪfɪn/) and replaced with /s/ initially (in flat /flæt/) in conversations.

Errors in first test were 3%.
These occurred 9% medially.

Errors in second test were 1%, an improvement of 67%.
These occurred 3% medially.
Errors in third test were 2%, an improvement of 33%.
These occurred 4% medially and 1% finally.

/v/
This phoneme occurs only initially in S.V., where it has very few errors and is pronounced too softly only 10% as /f/ (in vat /fæt/), (see p.58). It is also replaced with /f/ 20% medially (as in avid /æfɪd/) and 21% finally (as in have /hæf/). Other errors are 3% of omissions medially (as in coughs /kɒʃ/) and 25% finally (as in five /feɪv/) as well as 1% of over-articulations finally (as in five /feɪv/) which occur when speakers first try to pronounce this sound in an unfamiliar position. The same errors occur in conversations, as well as /b/ (in have /hæb/) and /s/ (in improve /ɪmprəʊ/).

Errors in first test were 29%.
These occurred 10% initially, 23% medially and 55% finally.
Errors in second test were 13%, an improvement of 55%.
These occurred 11% medially and 28% finally.
Errors in third test were 10%, an improvement of 66%.
These occurred 10% medially and 20% finally.

/θ/
This phoneme is very difficult for speakers of S.V. speakers to pronounce as it has no correspondence in S.V. (see p.58). It is replaced with /t/ 27% initially (as in thin /θɪn/), 13% medially (as in nothing /θaːtnɪŋ/) and 23% finally (as in
myth /mɪt/). It has 14% of omissions medially (as in months /mɑːnts/) and 4% finally (as in sixth /sɪks/). Other replacements are /w/ 2% medially (as in healths /ˈhelθz/) /d/ 3% finally (as in myth /mɪd/), and over-pronunciations of /θ/ 10% initially (as in thin /θɪn/) and medially (as in healths /ˈhelθz/). It has the same errors in conversations, as well as /f/ initially (in think /fɪŋk/).

Errors in first test were 31%.
These occurred 30% initially, 32% medially and 32% finally.

Errors in second test were 14%, an improvement of 55%.
These occurred 13% initially, 15% medially and 15% finally.

Errors in third test were 11%, an improvement of 65%.
These occurred 13% initially, 10% medially and 10% finally.

/θ/
This phoneme is extremely difficult for speakers of S.V. to pronounce due to having no correspondence in S.V., the closest sound being unvoiced /t/ or /d/ (see p.58). Even so, it showed significant improvement in tests. All initial replacements are /d/ (as in they /θeθ/) It is especially difficult in medial and final positions and is replaced 24% with /d/ medially (as in bather /ˈbeθər/) and 10% as /t/ finally (as in bath /ˈbeθ/) It is pronounced too softly medially 28% as /θ/ (in bather /ˈbeθər/) and 20% finally (in bathe /ˈbeθ/) Other replacements are 4% medially as /t/ (in bather /ˈbeθər/) and 1% as /s/ (in clothe /kləθ/) There are also 6% of
omissions medially (as in bathes [bæθes]). It has the same errors in conversations as well as /t/ and /z/ (in the as /tæθ/ and /zæθ/).

Errors in first test were 56%.
These occurred 34% initially, 64% medially and 70% finally. Errors in second test were 43%, an improvement of 23%.
These occurred 32% initially, 48% medially and 50% finally. Errors in third test were 30%, an improvement of 46%.
These occurred 9% initially, 32% medially and 50% finally.

/s/
This phoneme does not occur in positions other than initial in S.V. and is omitted 8% finally (as in moves [mʌvz]) which may be partly due to confusion with A.E. verb endings. It is replaced 4% medially with the less dental S.V. /s/ (see p.58). It is over-articulated as /z/ (in months [mʌnθz]), /zæ/ (in friends [frendz]) and /s/ (in lumps [lʌmz]). It is also replaced with /d/ (in bouncer [pauˈdər]) and becomes permuted in clusters (as in optics as [ˈɔptɪks]). Due to confusion with A.E. verb endings, it is also an extra phoneme (in gasped [ɡæspd]). In conversations /s/ shows much the same kind of errors, including other instances where it is an extra phoneme (as in because [bɪskɔz] and thin [θɪn]).

Errors in first test were 9%.
These occurred 3% initially, 13% medially and 12% finally.
Errors in second test were 2% an improvement of 78%.
These occurred 4% medially and 3% finally.
Errors in third test were 4% an improvement of 56%.
These occurred 3% medially and 8% finally.

/ʃ/
This phoneme has no correspondence with S.V. so is extremely difficult to pronounce (see p.58). It is replaced with /s/ 30% initially (as in zip /zip/) and finally (as in fissa /fisə/), and 27% medially (as in pizza /pɪzza/). It is replaced with /ʃ/ 3% finally (in fissa /fisə/), /d/ (as in fu:dy/) and is over-articulated finally 4% as /zsl/ (in moves /mu:zə/) and /ɔz/ (in bathes /beθəz/). It is replaced initially with /dz/ (in zip /dzip/) which is a phoneme that also does not exist in S.V., so must be a kind of hyper-correction. It is also omitted medially (in Mazda /məda/) and finally (in moves /mʌvə/) and is an extra phoneme initially (in usually /zu:zələ/). In conversations, the most usual replacements occur as /s/ (as in easy /əsə/).

Errors in first test were 44%.
These occurred 63% initially, 28% medially and 41% finally.
Errors in second test were 27%, an improvement of 39%.
These occurred 40% initially, 19% medially and 22% finally.
Errors in third test were 17%, an improvement of 61%.
These occurred 20% initially, 14% medially and 16% finally.
Although an approximation to this phoneme occurs only initially in S.V. (see p.59), it is not difficult for S.V. to pronounce and shows no errors in final position. All replacements are /s/, as S.V. speakers have difficulty in differentiating /s/ from /ʃ/, having only one, intermediate version of this phoneme in their language. There are 10% replacements initially (as in ship /ʃɪp/) and 14% medially (as in fisher /fɪʃər/). The same problem occurs in conversations, as well as an omission medially (in distinguished /dɪstrɪkwit/).

Errors in first test were 8%.
These occurred 10% initially and 14% medially.
Errors in second test were 1%, an improvement of 88%.
These occurred 2% medially.
Errors in third test were 1%, an improvement of 88%.
These occurred 2% medially.

/ʒ/
This phoneme has no correspondence with S.V. and is very difficult to pronounce (see p.59), but it is interesting to note that it showed significantly more improvements in the third test. It is replaced with /z/ 20% medially (as in vision /ˈvizən/) and 20% with /s/ (as in usually /ˈjuːsɪli/). It is replaced with /dʒ/ as a kind of over-pronunciation 5% medially (in vision /ˈvɪʒən/) and 30% finally (in rouge /ˈroudʒ/) and also pronounced too softly as /ʃ/ (in rouge /ˈrouʃ/) and
is omitted, becoming a S.V. triphthong 5% medially (in usually /ɪuːiː/). In conversations, there were very few examples and no errors.

Errors in first test were 43%.

These occurred 45% medially and 40% finally (there were no examples initially).

Errors in second test were 38%, an improvement of 12%.

These occurred 25% medially and 50% finally.

Errors in third test were 30%, a 33% improvement.

These occurred 20% medially and 40% finally.

/h/

This phoneme corresponds with initial /h/ in S.V., and presents no difficulty for S.V. speakers (see p.59), especially as it does not exist in the major difficulty of clusters. There were no errors in conversations.

There were no errors in tests.

/m/

This phoneme corresponds with S.V. /m/ initially and finally, and is not difficult to pronounce (see p.59). It has no errors initially or medially and has only a few errors finally. These occur 3% as /n/ (as in frame /frɛm/) and 2% as /p/ (in chasm /tʃæsm/ and 2% as an omission (in chasm /tʃæs/). In
conversations, there is only one unreleased /m-/ (in sometimes /sam-ta-mz/).

Errors in first test were 3%.
These occurred 10% finally.
Errors in second test were 4%, a regression of 33%.
These occurred 12% finally.
Errors in third test were 1%, an improvement of 33%.
These occurred finally.

/n/
This phoneme corresponds with S.V. /n/ initially and finally and is not difficult to pronounce (see p.59). It has no errors initially and very few finally, but has some difficulties medially where it is omitted 17% (as in account /'kōut/), unreleased 3% (as in nineteen /nain-ty:n/) and replaced with /ŋ/ 2% (in lunged /læŋt/). It is also an extra phoneme medially (as in menthol /mentɔl/) and finally (as in minced /miŋsdən/). In conversations it has omissions and replacements with /ŋ/ as well as a final replacement with /k/ (in design /desərk/).

Errors in first test were 10%.
These occurred 21% medially and 9% finally.
Errors in second test were 3%, an improvement of 70%.
These occurred 9% medially.
Errors in third test were 4%, an improvement of 60%.
These occurred 7% medially and 1% finally.
/ʊ/
This phoneme is similar to, although less velarised than S.V. /ŋ/ which also occurs finally, so is not difficult for S.V. speakers. It is, however, over-articulated perhaps due to misunderstood orthography, with an extra phoneme /ʒ/ 17% medially (in singer /ˈsɪŋɡər/) and 10% finally (in thing /ˈθɪŋ/). It is replaced medially 5% with /n/ (as in thanked /ˈθæŋkt/) and is an extra phoneme (in trudged /ˈdrʌdʒt/). In conversations, it is over-articulated (as in English /ˈɛŋklɪʃ/ and tongue /ˈtʌŋg/) and replaced with /n/ finally (in studying /ˈstʌdɪŋ/).

Errors in first test were 16%.
These occurred 22% medially and 10% finally (there were no examples initially).

Errors in second test were 8%, an improvement of 50%.
These occurred 15% medially.

Errors in third test were 9%, an improvement of 44%.
These occurred 7% medially and 10% finally.

/ʌ/
This phoneme has no errors initially as /ʌ/ exists in that position in S.V. (see p.60). It presents difficulties in other positions, however, substituting the nearest S.V. approximation /u/ 15% medially (as in teller /ˈtelər/) and 41% finally (as in sell /ˈsɛl/). It is omitted 8% medially (as in sulks /ˈsʌks/) and 10% finally (as in handful /ˈhændfʊl/). It is replaced with /ʒ/ 1% medially (in films /ˈfɪlmz/) /n/ (in cults /ˈkʌltz/).
and /ɔ:/ 1% finally (in haggle /hægəl/). Other replacements are medially as /n/ (in cults /kʌlts/), /m/ (in helps /hælpz/), /l/ (in clearly /klɪəli/) and /w/ (in personality /ˈpɜːsnələti/). It shows the same kind of errors in conversations.

Errors in first test were 26%.

These occurred 26% medially and 53% finally.

Errors in second test were 14%, an improvement of 46%.

These occurred 15% medially and 28% finally.

Errors in third test were 10%, an improvement of 62%.

/r/

This phoneme shows less difficulty initially, where it has a trilled approximation in S.V. (see p.61). It is replaced in this position only 5% as S.V. /ɹ/ (in red /red/), whereas it is replaced 26% medially (as in beret /berət/). Other errors occur medially as an omission (in difference /ˈdɪfəns/), as a replacement (in prime /praɪm/) and as an extra phoneme (in first /fɜːst/). In conversations it has the same kind of errors, as well as /ɹ/ (in problem /ˈprɒbləm/) and /ʃ/ (in structural /ˈstrʌktʃəl/) in medial position. This phoneme did not respond readily to instruction at first, but showed significant improvement six months later.

Errors in first test were 17%.

These occurred 5% initially and 28% medially (this phoneme

245
does not occur finally).

Errors in second test were 17%, showing no improvement.
These occurred 13% initially and 21% medially.
Errors in third test were 8%, an improvement of 53%.
These occurred 5% initially and 10% medially.

/j/
This phoneme occurs in S.V. (see p.60), so was not difficult
to correct. In initial position, it had 15% replacements of
/j/ (in *vaught* /vɔt/) 5% of /d/ (in *vaught* /dɔt/) and 5% 
omissions (in *usually* /u:'zliː/). It is replaced with S.V.
allophone /ʃ/ (in *foyer* /fo'r/) and omitted 5% (in *foyer* 
/fo:'r/) in medial position.

Errors in first test 18%.
These occurred 25% initially and 21% medially (this phoneme
does not occur finally).
Errors in second test were 10%, an improvement of 44%.
These occurred 10% initially and 10% finally.
Errors in third test were 3%, an improvement of 83%.
These occurred 5% initially and 5% finally.

/w/
This phoneme exists in S.V. and has very few errors (see p.61).
These occur only in medial position, 3% as /r/ (as in *twice* 
/trais/) and 3% as omissions (in *aquainted* /æk'ɔntid/).
Errors in first test were 3%.
These occurred 6% medially (this phoneme does not occur finally).

There were no errors in second or third tests, showing improvements of 100%.

6.4 Consonant clusters

Consonant clusters have been summarized in Chapter 5 as follows:

/ps/, /pt/, /pl/ and /pr/ are summarized on p.137.

/bd/, /bdʒ/, /bz/, /bl/ and /br/ are summarized on p.140.

/ts/, /tʃt/, /tl/, /tr/ and /tw/ are summarized on p.145.

/dz/ and /dr/ are summarized on p.148.

/k t/, /ks/, /kʃ/, /kl/, /kr/ and /kw/ are summarized on p.152.

/gl/ and /gr/ are summarized on p.154.

/dʒd/ is summarized on p.156.

/ft/, /fθ/, /fs/, /fl/ and /fr/ are summarized on p.159.

/vd/ and /vz/ are summarized on p.161.
/θt/, /θs/ and /θr/ are summarised on p. 163.

/ðd/ and /ðz/ are summarised on p. 166.

/sp/, /st/, /sk/, /sm/, /sn/ and /sw/ are summarised on p. 169.

/zd/, /zm/ and /zn/ are summarised on p. 172.

/r/ is summarised on p. 174.

/nt/, /ntʃ/, /nd/, /ndʒ/, /nθ/, /ns/, /nz/ and /nl/ are summarised on p. 179.

/nk/ and /nl/ are summarised on p. 180.

/lp/, /lt/ and /lf/ are summarised on p. 181.

/ktr/, /kts/ and /ksθ/ are summarised on p. 184.

/spt/, /spʃ/, /spl/, /spr/, /stʃ/, /str/, /skt/, /skʃ/, /skr/, and /skw/ are summarised on p. 193.

/mpt/, /mpʃ/, /mft/ and /mfs/ are summarised on p. 198.

/nst/, /ntʃ/, /ntʃt/, /nŋl/, /nkʃ/, /ntl/, /ndʒd/ and /nʃs/ are summarised on p. 205.
/ŋkt/ and /ŋks/ are summarised on p. 207.

/lpt/, /lps/, /lts/, /lkt/, /lks/, /løs/, /lst/, /lmd/ and /lmz/ are summarised on p. 219.
CHAPTER 7
SUGGESTIONS FOR TEACHING

7.0 Introduction
During the development of this thesis, I have spent a great amount of time reflecting on the different methods I have used for the teaching of pronunciation to Vietnamese people. At the same time I have been in the most fortunate position of being able to regularly conduct English pronunciation classes for the benefit of both Vietnamese and other Asian speakers whose language backgrounds have been Cantonese, Mandarin, Korean, Japanese and Khmer. The methods and explanations used seemed to be suitable for students with these various backgrounds.

My basic methodology has been to model the sounds for students to imitate, using humorously illustrated pronunciation books containing phonetic transcriptions have also been used for further practice in all aspects of pronunciation. This has been done in small groups of up to six people or individually, for a minimum of ten, one hour lessons before students being referred to individual learning material, using tapes and books. I have found, however, that this latter method has not been very popular, as students need a good instructor to point out the errors they are unable to recognise themselves.
7.1 Planning what to teach
It is very useful for the teaching pronunciation if new students are recorded reading some word lists or reading passages.
I have also transcribed and colour coded the transcriptions, indicating the types of errors for students to see. For example, red was used to indicate complete omission of sound, yellow was used for sounds that are released too softly, orange for over-articulated sounds, green for grammatically incorrect use of verb or plural endings, blue for errors caused by misunderstood orthography. This is of course time consuming, but has both the advantage of showing the students quite graphically just how they have mispronounced the sounds, as well as giving the teacher an accurate needs analysis on which to base a series of lesson plans. Generally, the students were very interested to see their errors.

7.2 Some practical ideas for teaching
I have found it useful to firstly show students the International Phonetic Alphabet symbols used for Australian English, making sure that the sounds and symbols are recognised so that they can be used by the teacher. They will also make it possible for the students to begin using dictionaries to full advantage. (It can be noted that the most used dictionary in Australia, The Macquarie Dictionary, uses the I.P.A. symbols.) Showing diagrams of mouth positions can be helpful to some students in learning to articulate new sounds, but repeated oral demonstrations and explanations are usually more effective.
In some cases a small mirror has been used to advantage.

It is apparent that one of the initial hindrances to improvement of pronunciation is that students are not able to 'hear' themselves accurately. For this reason, I teach techniques such as cupping the hand behind the ear or standing very closely facing into the corner of a room, to reflect the students' voices back and intensify their hearing. The more recent method of letting the students listen to their voice from a tape has also been used successfully. It is also most important for students to learn initially preferably from a native speaker, or else to listen to tapes of a native speaker, because errors initially learned are difficult to correct (Hammarstrom, 1954, p.307).

It is necessary to repeatedly remind students to project their voice more forward in the mouth, as most of their sounds are articulated more to the back. It is also important to repeatedly remind them to lengthen and relax long vowels and diphthongs, and to allow the mouth shape used for pronouncing the consonants to be governed by the mouth shape of the vowel. This can be done by asking the students to pronounce the vowels or diphthongs first, before pronouncing the actual word, for example, /i:/, heat or /ou/, boat. In other words, their degree of co-articulation is too low and has to be learned in two steps.

Showing students copies of sonagrams of long and short vowels (see chap.10) has helped them to fully understand the shortened
lengths of the vowels used in their own language, especially when these are followed by a consonant. They are then aware of the importance of not transferring them into English.

Vietnamese is a tonal language where the voicing is concentrated primarily in the vowel sounds so students have difficulty learning how to voice consonants correctly. I have found it very useful to show the following diagram to enable them to see which 'unvoiced' phonemes with air released through the mouth have a corresponding 'voiced' phoneme with little or no airflow, using the same mouth position. The 'voicing' in the larynx was felt with the finger and the palm of the hand was used to check the airflow. These sounds should be practised in minimal pairs, to make sure they contrast well. Vietnamese does not contain the A.E. phonemes of /s/ and /ʃ/, so they also need to be practised in contrast. As well as this, practise of contrasting /z/ and /ʒ/ needs to be given.

\[
\begin{array}{ccccccccc}
\text{unvoiced} & /p/ & /t/ & /k/ & /tʃ/ & /f/ & /θ/ & /s/ & /ʃ/ \\
\text{voiced} & /b/ & /d/ & /g/ & /dʒ/ & /v/ & /ð/ & /z/ & /ʒ/
\end{array}
\]

As the unvoiced sounds are easier to pronounce than the voiced ones, I have found it useful to relate the concept of Vietnamese 'dropped' vowels (dau nang) which are the vowels with the lowest of the six possible tones. I explain that the vowels in English are not 'dropped' but the voiced consonants are.
I have found it useful to point out to students that in their language it is very good practise (especially for men) to pronounce the monosyllabic words separately and clearly, with final consonants unreleased. I then explain that final consonants are also sometimes not released in English when words are pronounced in isolation or are not linked to another word e.g. "Where is the hat?" where /t/ may be unreleased in normal speech. In contrast, "The hat is on the table", /t/ is linked onto the 'is' and thereby always released. (This of course is then often shortened to /ts/ as "The hat's on the table".) I then explain the breathing processes involved in English and the relation these have to stress and intonation which can be more easily taught following, and in relation to this information. (Stress and intonation, however, have been considered to be outside the scope of this thesis.)

Another point worth mentioning here is that Vietnamese girls who have come from very traditional backgrounds tend to speak with an inappropriately high and softly pitched voice. They can learn to use their voice in a more effective way if it is explained that they need to lower it and project it more forward.

In some cases I have discovered 'tricks' to help students master phonemes. For example, in the case of /g/, I explain that in English this sound is not fricative and it is also forward in the mouth. To help find the correct position, I
ask the students to repeat /k/ several times before saying /g/. In the case of /dʒ/ (one of the most difficult consonants), I have found that if the students repeat /jʊ/ several times first, they are then able to pronounce a clear /dʒ/. People who have learned French as a second language seem to have added difficulties due to interference in particular when pronouncing /g/, /dʒ/ and /r/.

Another 'trick' can be used to help the students pronounce a final /l/ (which is another difficult sound). This is done by asking students to pronounce la-la-la, then lalalal-al-al until they are able to use their tongue correctly. In the case of /r/, it must be explained that in English it is not flapped. Students are then asked to almost shut their mouths, pulling both corners of the mouth firmly in as they try to pronounce the sound correctly.

There are some types of errors that are only made by some of the students, for example over-articulation in an effort to speak well, often resulting in an extra /ʒ/ sound, and a misuse of /s/, either by using it too often or not enough. This latter problem is one of misunderstood grammar in English verb and plural endings. Students need to have this pointed out so that they can correct their grammar. Some students try to labialise /l/, making a /r/ sound and others pronounce a flapped /l/.
After the various phonemes have been mastered individually, there follows the problem of clusters, as they do not occur in Vietnamese. One of the most important of these to master is final /ts/, as it is quite difficult for the students who tend to separate the two phonemes as /t-s/. Other clusters, especially those occurring in final position such as /dz/ and /nz/ need to be practised as well.

As students begin to understand and master English pronunciation as well as the supra-segmentals of linking, rhythm, stress and intonation, it will be found that their improvement will be both continuous and long lasting even though there is no further instruction given. All students continue to improve their pronunciation, even after the end of the classes.

These suggestions are certainly not complete and I hope to be in a position to develop them further in the future. It would be most useful if a pronunciation book especially designed to suit the classroom teaching of Asian students of English were to be produced, and it is my wish to do so in the near future.
CHAPTER 8
PRONUNCIATION DIFFICULTIES AND IMPROVEMENTS

8.0 Introduction
In this chapter the percentages of pronunciation errors in each of the three tests and the improvements made have been calculated in two ways. The first way was to estimate from the overall number of examples of vowels and consonants in the tests, and the second way was to estimate only the consonants in word position. Orders of phoneme difficulties and improvements of individual students have been analysed.

8.1 Results of statistical analysis
The degree of similarity among the ten subjects regarding the errors made in pronouncing the twenty-four consonants and the twenty vowels and diphthongs was determined by calculating the Coefficient of Concordance (W) and Spearman's average rank correlation coefficient (RS) (Moroney, 1956).

The results showed there was a high level of concordance among the ten subjects in the ranking of consonants according to pronunciation difficulty (W = 0.65, 0.60 and 0.54 for tests one, two and three, respectively). These values are highly significant as the probability of them arising by chance alone are less than 1 in 1,000 (p < 0.001). The corresponding Spearman's average rank correlation coefficient for the same tests were 0.61, 0.56 and 0.48, respectively.
In the case of the vowels and diphthongs, the coefficient of concordance for the three tests was much lower (W = 0.30, 0.20 and 0.16) as was Spearman's average rank correlation coefficient (R = 0.22, 0.11 and 0.07). The results for tests one and two were significant at the 0.1% and 5% levels, respectively.

Changes in the performance of the subjects as measured by the decrease in the percentage of errors made were examined using Wilcoxon's paired T test. Without exception, all subjects showed a significant (p<0.01) or highly significant (p<0.001) decrease in consonant pronunciation errors between tests one and two and tests one and three.

In the cases of vowels and diphthongs, there was also an overall improvement from tests one to three, but it was not possible to demonstrate statistical significance, due to the relatively low error rate recorded initially.

Overall percentages of errors in the three tests were as follows:

first test showed 19.3% of errors
second test showed 11.7% of errors
third test showed 8.4% of errors
Table 1
Total error improvement percentages (IP) of ten students in vowels and diphthongs (not including added phonemes), showing initial error percentages (EP). (Phonemes are shown in order of difficulty in first test)

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Diphthongs

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8.2 Difficulties and improvements in vowels

Table 1 shows the overall order of difficulty in the pronunciation of the vowels and diphthongs (not calculated in word position, and not including added phonemes) of the ten students in the first test, and the percentages of their improvements, nine months later. The most difficult vowels are the long vowels, /i:/, /o:/ and /u:/ (see chap.6) and the most difficult diphthongs are /e1/, /au/ and /ou/.
Table 2
Order of difficulty of ten students in vowels and diphthongs

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Table 2 shows the concordance of the order of difficulty among the individual students recorded in the first test. This was not as stable as the concordance of the consonants, probably due to the lower number of examples recorded.
Table 3
Error percentages of vowels and diphthongs (calculated in word position and including added phonemes) and overall percentages of improvements (IP) in second and third tests. The difficulty order (OD) is shown for each test and the overall order of improvement (OIP) is shown in the last column. (The phonemes are shown in order of difficulty in first test)

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Table 3 shows the average order of difficulty of the pronunciation of the vowels and diphthongs. This is based on the more detailed analysis of phonemes calculated in word position (see chapter 5) and includes vowels as added phonemes. The order of difficulty is similar to table 1, with the most difficult vowels being /i:, /u:/ and /o:, and the most difficult diphthongs being /ɛr/, /æu/ and /æ/. It also shows the improvements in the second and third tests, showing the changed orders of difficulty. The orders of improvement of the phonemes are most probably influenced by the fact that I may have spent more time teaching the more difficult phonemes to students than the less difficult ones.
## Table 4

Total error improvements (IP) of ten students in consonants (not including added phonemes), showing initial error percentages (EP) (Phonemes are shown in order of difficulty in first test)

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8.3 Difficulties and improvements in consonants

Table 4 shows the overall order of difficulty in the pronunciation of consonants (not calculated in word position and not including added phonemes) of the ten students in the first test, and the percentages of their improvements, nine months later. The most difficult consonant is /dʒ/, followed by /ʒ/, /d/, /ɡ/, /r/, /ŋ/, /n/, /l/, /v/, /θ/, /ʃ/ and /ɡ/ in this order.
Table 5
Order of difficulty of ten students in consonants

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<thead>
<tr>
<th>Phoneme</th>
<th>Students</th>
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<td>1</td>
</tr>
<tr>
<td>/dy/</td>
<td>1</td>
</tr>
<tr>
<td>/s/</td>
<td>5</td>
</tr>
<tr>
<td>/d/</td>
<td>2</td>
</tr>
<tr>
<td>/r/</td>
<td>8</td>
</tr>
<tr>
<td>/l/</td>
<td>4</td>
</tr>
<tr>
<td>/N/</td>
<td>6</td>
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<tr>
<td>/N/</td>
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<td>/R/</td>
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<td>/I/</td>
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<td>/R/</td>
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<td>/R/</td>
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<tr>
<td>/I/</td>
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<tr>
<td>/k/</td>
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<td>/p/</td>
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<td>/N/</td>
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<tr>
<td>/s/</td>
<td>15</td>
</tr>
<tr>
<td>/t/</td>
<td>-</td>
</tr>
<tr>
<td>/u/</td>
<td>13</td>
</tr>
<tr>
<td>/m/</td>
<td>-</td>
</tr>
<tr>
<td>/n/</td>
<td>-</td>
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</table>

Table 5 shows the order of difficulty in the pronunciation of consonant phonemes by the individual students recorded in the first test. This test shows a high level of concordance among the students.
Table 6
Order of difficulty showing percentages in word position and average of these

<table>
<thead>
<tr>
<th></th>
<th>Initial</th>
<th>Medial</th>
<th>Final</th>
<th>Average</th>
</tr>
</thead>
<tbody>
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<td>64</td>
<td>70</td>
<td>56</td>
</tr>
<tr>
<td>/t/</td>
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<td>66</td>
<td>43</td>
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<td>/ɣ/</td>
<td>-</td>
<td>45</td>
<td>40</td>
<td>43</td>
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<td>/dʒ/</td>
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<td>41</td>
<td>57</td>
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<td>48</td>
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<td>26</td>
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<td>/ʃ/</td>
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<td>-</td>
<td>18</td>
</tr>
<tr>
<td>/t/</td>
<td>5</td>
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<td>-</td>
<td>17</td>
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<tr>
<td>/ð/</td>
<td>-</td>
<td>22</td>
<td>10</td>
<td>16</td>
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<td>/u/</td>
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<td>18</td>
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<td>/r/</td>
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<td>21</td>
<td>9</td>
<td>10</td>
</tr>
<tr>
<td>/s/</td>
<td>3</td>
<td>13</td>
<td>12</td>
<td>9</td>
</tr>
<tr>
<td>/ʃ/</td>
<td>10</td>
<td>5</td>
<td>10</td>
<td>8</td>
</tr>
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<td>/ʃ/</td>
<td>10</td>
<td>14</td>
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</tr>
<tr>
<td>/p/</td>
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<td>6</td>
<td>5</td>
<td>7</td>
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<td>9</td>
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<tr>
<td>/h/</td>
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<td>0</td>
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</tbody>
</table>

Overall errors 15.0% 24.7% 27.5% 22.3%

Table 6 shows the average order of difficulty of the pronunciation of the consonants. This is based on the more detailed analysis of phonemes calculated in word position (see chapter 5) and includes consonants as added phonemes. As can be seen, /ʃ/, /d/, /dʒ/, /v/, /l/ and /b/ show less difficulties in initial than in medial position, with the most errors occurring in final position. /j/ and /r/ do not occur in final position, but show more difficulties medially than initially. /ʒ/, /g/, /ŋ/, /ʃ/, /p/ and /r/ show most errors medially and least finally, /t/, /n/ and /s/ show most errors medially and least initially and /k/ shows most errors.
Table 7
Average error percentages and percentages of improvements in second and third tests

<table>
<thead>
<tr>
<th>Original Order of Difficulty</th>
<th>Average Errors in First Test</th>
<th>Average Errors in Second Test</th>
<th>Improvements from First to Second Test</th>
<th>Average Errors in Third Test</th>
<th>Improvements from First to Third Test</th>
</tr>
</thead>
<tbody>
<tr>
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<td>1</td>
<td>67</td>
<td>2</td>
<td>33</td>
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</table>

**Overall improvements** | 45.3%                        | 60.3%                       |

Initially and least finally. /tʃ/ shows more errors initially and finally, and /θ/ shows more errors medially and finally. /w/ and /f/ only have errors medially, /m/ only has errors finally and /h/ shows no errors at all.

The order of difficulty is similar to Table 4, with the ten most difficult phonemes being /ɔI/, /zI/, /dI/, /ʒI/, /ɗI/, /vI/, /gI/, /l/ and /ʃI/, in this order.

Table 7 shows the improvements in the second and third tests, showing the slightly changed order of difficulty. The improvement
there is little relation between the difficulty and improvement of the consonants except that two of the less difficult ones, /p/ and /w/ improved 100%. To a certain extent, the improvement percentage was probably influenced by the fact that I spent more time teaching the difficult phonemes to the students than the less difficult ones.

Nguyen Dang Liem, in his phonological contrastive analysis of English and Vietnamese (1970 p.31) shows that the most difficult consonants for these people to recognise in contrast are as follows: /dʒ/ /tʃ/

/b/ /p/ /j/ /f/

/ʒ/ /θ/ /z/ /s/

/g/ /k/ /d/ /t/

Certainly, I have found that the most difficult phonemes to pronounce are included in this list, excepting /p/ and /b/ which he finds among the most difficult. Consequently, there is a relationship between the recognition of sounds and the ability to pronounce them.

S.V. people have more difficulty in pronouncing voiced consonants than unvoiced (see tables 5 and 6) and I found that insufficiently aspirated phonemes were hardly noticable to me. Phonemes that were not voiced enough were /ʒ/ replacing /ʒ/ 34%, /s/ replacing /z/ 30%, /t/ replacing /d/ 25%, /d/ replacing /t/ 25%, /f/ replacing
Table 8
Percentages of production problems in consonants initially and finally, according to Nguyen Dang Liem (1990 p.54, 69)

<table>
<thead>
<tr>
<th>Consonants</th>
<th>Initial Errors</th>
<th>Consonants</th>
<th>Final Errors</th>
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<tbody>
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<td>2.9</td>
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<tr>
<td>/t/</td>
<td>26.9</td>
<td>/v/</td>
<td>30.8</td>
</tr>
<tr>
<td>/k/</td>
<td>21.2</td>
<td>/s/</td>
<td>46.2</td>
</tr>
<tr>
<td>/b/</td>
<td>15.4</td>
<td>/z/</td>
<td>34.6</td>
</tr>
<tr>
<td>/d/</td>
<td>3.8</td>
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<td>39.5</td>
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<td>2.9</td>
</tr>
<tr>
<td>/g/</td>
<td>20.0</td>
<td>/m/</td>
<td>0</td>
</tr>
<tr>
<td>/d/</td>
<td>69.2</td>
<td>/n/</td>
<td>1.9</td>
</tr>
<tr>
<td>/l/</td>
<td>1.9</td>
<td>/r/</td>
<td>-</td>
</tr>
<tr>
<td>/n/</td>
<td>57.7</td>
<td>/w/</td>
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<tr>
<td>/f/</td>
<td>28.2</td>
<td>/y/</td>
<td>30.8</td>
</tr>
</tbody>
</table>

/v/ 19%, /s/ replacing /Ʒ/ 17%, /p/ replacing /b/ 11% and /k/ replacing /g/ 11%.

Table 8 shows the analysis of production problems in initial and final positions according to Nguyen Dang Liem (1970, p.54, 69). On the whole, my analysis is in agreement with Liem, but it is of interest to comment that he hears a large percentage of unaspirated /p/ and /b/, which I do not. I have possibly overlooked some of these difficulties as 'borderline' pronunciations that could perhaps be excepted. In phoneme /d/, I hear a large percentage of /t/ initially, while Liem hears a somewhat lower percentage of /d/. In final /ʒ/, Liem hears a much greater percentage of /k/ than I do. In /tf/, Liem hears errors of /ʃ/ and I hear /dʒ/ and /f/. I hear more errors replacing /z/ initially and Liem hears more finally. As well as this, I hear less errors replacing /r/ initially and more finally than Liem. One explanation for these differences.
could be that Liem's hearing is influenced by his own Vietnamese to a certain extent and another could be that his analysis included people from different parts of Vietnam. Certain errors such as the Northern Vietnam replacement of /n/ for final /l/, do not occur in my analysis.

8.4 Errors and improvements of subjects and their self-assessment
Table 9 shows the overall error percent for each subject in the first test (not including added phonemes). They ranged from subject number six with 20% to subject number nine with 9%. The maximum improvements were gained by subjects number seven and four with 51% and the minimum improvements by subject number nine with 25%. It is interesting to note that the two subjects who gained the most improvements were brother and

<table>
<thead>
<tr>
<th>Errors</th>
<th>Students self-assessment</th>
<th>6</th>
<th>5</th>
<th>8</th>
<th>7</th>
<th>4</th>
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<th>1</th>
<th>10</th>
<th>2</th>
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<td></td>
</tr>
<tr>
<td>Error per cent in first test</td>
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<td>17</td>
<td>16</td>
<td>15</td>
<td>15</td>
<td>14</td>
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</tr>
<tr>
<td>Improvements</td>
<td>Per cent of error improvement</td>
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<td>40</td>
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<td></td>
</tr>
</tbody>
</table>

Table 9
Percentage of students' errors and improvements in first test and self-assessment of pronunciation abilities
sister, indicating that they may have given each other some mutual encouragement, and subject number nine, the subject with the least errors showed the least improvement. Otherwise there seems to be no correlation between the initial number of errors and the overall improvements of the subjects.

The results of the subjects' questionnaire appeared to be very subjective and indicated that on the whole, they were not able to clearly assess their pronunciation abilities. The three subjects with the most errors thought their pronunciation was acceptable and two of the subjects with the least errors believed their pronunciation was bad. Only the subject with the minimum errors was accurate in her assessment that she was good, but perhaps she may not have been so accurate in her assessment that she had improved much, when in fact she had improved less than the others. It was encouraging to see that six of the subjects believed they had improved much, and four believed they had improved somewhat.
CHAPTER 9
THE APPROXILECT

9.0 Introduction
This chapter describes the approxilect spoken by S.V. speakers of A.E. and summarises and discusses the most usual differences from A.E.

9.1 Description of vowels in the approxilect
In the approxilect spoken by S.V. speakers of A.E., all the vowels and diphthongs exist (see table 3) although they are sometimes not quite correctly pronounced. There are no errors recorded in the tests in the cases of /aː/, /a/, /ɔː/, /ɔ/, /iə/, /ɛə/ and /ʊə/. There is a tendency to shorten some vowels and diphthongs (see p.222-9), as in the cases of /iː/ which is shortened 23%, /e/ 21%, /uː/ 15%, /o/ 10%, /a/ 5%, /ɛ/ 2% and /a/ 1%.

![Figure 1: Vowels of S.V. and A.E.](image)

- S.V. vowels
- A.E. vowels

FIGURE 1 Vowels of S.V. and A.E.
The first quadrilateral includes the vowels of A.E. and S.V. in order to show the relative positions used in the two languages (see fig.1). The second quadrilateral includes the most common quality of the approxilctal phonemes, showing the typical approxilect. In the case of /i:/, two phonemic qualities have been taken into account (see fig.2).

![Diagram](image)

FIGURE 2: Vowels of the approxilect of A.E.

Table 1 (see below) shows the vowels used in the approxilect of A.E. and the empirically corresponding S.V. vowels. These show little difference in quality, but due to interference from the source language, there is a general velarisation. The vowel /i:/ is shortened to /i/, /ɔː:/ is sometimes shortened to /o/, and /ɛ/ and /E/ are sometimes shortened and pronounced towards the back of the mouth.

271
<table>
<thead>
<tr>
<th>A.E.</th>
<th>Approxilect</th>
<th>S.V.</th>
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<td>beat /i:/</td>
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<td>ði /i/</td>
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<td>bit /I/</td>
<td>/I/</td>
<td>ði /i/</td>
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<td>put /u/</td>
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<td>boot /uː/</td>
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<td>ngu /u/</td>
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Table 1: Approxilect related to empirically corresponding vowels of S.V. and A.E.

9.2 Description of consonants in the approxilect
In the approxilect, all the A.E. consonantal phonemes exist (see table 2), although they are sometimes not quite correctly pronounced. However, they are not represented as often as they should be in words, since they are sometimes replaced with incorrect A.E. phonemes or with S.V. approximations. They are also omitted, particularly in clusters and in medial and final positions (see p.86-220 for details of these).

Omissions of /d/ occur 16%, /v/ and /θ/ 9%, /ð/ and /n/ 8%,

272
### Australian English Consonants

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**Table 2**
Approximate Percentages of Consonants and Variants

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*Note:* The percentages are approximate and may vary slightly from the actual data.
/l/ 8%, /j/ 7%, /t/ 6%, /k/ 4% and /s/ 3%. A.E. phonemes used in the wrong position are /t/ as a variphone of /θ/ 20%, /u/ as /l/ 18%, /z/ as /ʒ/ 15%, /d/ as /ð/ 10%, /b/ as /p/ 6% and /g/ as /k/ 5%. /ŋ/ is over-articulated as /ŋɡ/ 10%. Added phonemes in the approxilect are /g/ 5%, /k/ 4%, /t/ 3%, /s/ 4% and /z/ 4%. Interference from the source language causes the substitution of S.V. /ŋ/ for /g/ 8% and S.V. /ə/ for /r/ 16% (see table 2).

As in the case of the vowels, voiced consonants tend to be velarised and pronounced too far back in the mouth due to influence from the source language. Other results of interference are that consonants are often not articulated strongly enough and are either not voiced, or else not voiced enough (as in /d/ becoming /t/).

As the airflow in S.V. tends to come out through the nose, there is also a tendency to not release enough air through the mouth resulting in a lack of clarity between voiced and unvoiced plosives. There is also a lack of contrast between the voiced and unvoiced fricatives and affricates, causing difficulty for the listener to be sure of the intended target phoneme as in confusion of /s/ with /ʃ/. Other problems occur such as /s/ being confused with /ʒ/ due to the palatalisation of the /s/ phoneme in Vietnamese, /r/ being trilled due to interference from the S.V. retroflexive /r/, and /l/ becoming /u/ in medial and final positions due to this phoneme not
occurring in these positions in Vietnamese.

9.3 Errors not able to be predicted
In the approxilect, predictions of the errors (chapter 4) were more than 90% accurate. However, certain errors were not able to be predicted such as in the cases of hyper-corrections and over-articulations (see p.63) where subjects over-compensate their pronunciation in an attempt to speak 'correctly'. Other pronunciation errors that were not able to be predicted were those that were due to the incorrect reading of words, and to odd permutations of phonemes occurring in consonant clusters. Although it was predicted that consonants would be omitted in clusters due to them not occurring in Vietnamese, many omissions were not able to be predicted.

/ð]/ was a phoneme that presented great difficulty for the subjects and showed many variants that were not able to be predicted such as /t/, /k/, /g/, /z/ and /ʒ/. Other such errors were /tʃ/, /dʒ/, and /s/ replacing /ʒ/, /tʃ/ and /s/ replacing /ʒ/, /ð/ and /ʒ/ replacing /j/, /s/ replacing /m/, /p/ replacing /f/, /ʃ/ replacing /z/ and /n/ replacing /l/. It can be seen that the replacements have at least one feature in common with the correct sound. Apart from these, there were numerous random more or less isolated replacements that were not able to be predicted (these are analysed in detail in chapter 5).
9.4 Summary of first language interference

Due to Vietnamese not having any phonemic contrast involving long and short vowels (Huynh, 1989, p.174) and the greatly shortened 'bound' vowels (see p.286), /iː/, /eː/, /ɔː/, /ɔː/ and /uː/ are often shortened, particularly in medial position (for details, see chap.5). Conversely, I have found only one hyper-correction where /a/ is lengthened. Due to S.V. having monosyllabic words, multisyllabic words can sometimes be shortened by omitting /eː/, /a/ and /ɔː/ initially or by omitting syllables in other positions.

Although there are many diphthongs in S.V., only a few correspond to those in English. /aɪ/, /eɪ/, /au/ and /ou/ also become shortened in medial position.

There are a very limited number of consonants occurring in final position in S.V. and no consonant clusters (Huynh, 1989, p.174). There are less voiced consonants as well as a lack of contrast between voiced and unvoiced consonants as there is in English, meaning that there is a general difficulty in enunciating voiced consonants sufficiently. As well as this, there is confusion between them, resulting in some hyper-corrections of unvoiced phonemes to voiced phonemes.

The voiced plosives /b/, /d/ and /ɡ/ are frequently not voiced or not sufficiently voiced, particularly in clusters as well as medially and finally.
The voiced fricatives /v/, /θ/ and /ʒ/ tend to be unvoiced in all positions but more so medially and in clusters, and the affricate /dʒ/ is frequently insufficiently voiced in all positions.

In the process of learning to voice /t/, /d/, /v/ and /z/, there are some hyper-corrections occurring as over-articulations in final position. /dʒ/ is also often replaced with /ʒ/ in the learning progression. As /ŋ/ occurs only initially in S.V., it has a few overarticulations occurring medially and finally, possibly accentuated by misunderstood orthography.

Other forms of interference occur in /θ/ becoming /t/ and /ð/ becoming /d/ in all positions. In other words, they use the dentals existing in their own language, although these are not fricative. What appears to be an /ŋ/ occasionally replaces /n/ medially in clusters as well as finally, could be due to the speakers generally articulating more to the back of the mouth. Also, /v/ or occasionally /ŋ/ replace lateral /l/ in positions other than initial, which is certainly due to the fact that there is no final /l/ in S.V. Continuant /r/ is replaced with the S.V. retroflex /r/, particularly in medial position, and semi-vocoid /j/ is pronounced as /d/ or hyper-corrected to /dʒ/ initially. /j/ only occurs medially as a semi-vowel in S.V. triphthongs. Occasional hyper-corrections of /n/ and /k/ occur in medial position.
There is another kind of hyper-correction caused by misunderstood grammar which results in /t/ being replaced with /s/ and /s/ being added in final position and occasionally medial (see p.239). Final /tʃ/ or /dʒ/ can also be replaced with /s/, but this may not be due to misunderstood grammar.

Due to difficulties in pronouncing clusters, there are omissions, mainly in the last segment of the clusters in final position. These omissions are due to first language interference because there are no clusters in the source language, and final consonants are unreleased. I must admit, however, that I am unclear as to why there are no omissions in the exceptions mentioned. In clusters containing three consonants, /t/, /d/, /s/ and /z/ are the most frequently omitted, particularly in final position.

9.5 Error classes in vowels and diphthongs

With 17 occurrences, EC4 (replacement with similar pronunciation, see p.63) is the largest error class in vowels and diphthongs. These replacements mostly consist of shortened vowel phonemes. EC1 (misreading, see p.64) occurs seven times and is the second largest. It also consists of shortened vowel phonemes. There are only two occurrences of EC1 (omission, see p.63) and two of EC3 (over-articulation, see p.63).

9.6 Error classes in consonants.

In table 4 the relative sizes of error classes of consonants
can be seen in word position. (See pages 63 and 64 for descriptions of error classes.) As can be seen, some error classes are large and others are small. EC4 (replacement) is the largest with a total of 163 members and the smallest is EC8 (permutation) with only five members. In classes, there are more members in medial word position, except in the case of EC3 which has more members finally.

<table>
<thead>
<tr>
<th></th>
<th>Initial</th>
<th>Medial</th>
<th>Final</th>
</tr>
</thead>
<tbody>
<tr>
<td>EC1 (omission)</td>
<td>3</td>
<td>38</td>
<td>25</td>
</tr>
<tr>
<td>EC2 (unreleased)</td>
<td>-</td>
<td>8</td>
<td>1</td>
</tr>
<tr>
<td>EC3 (over-articulation)</td>
<td>-</td>
<td>6</td>
<td>13</td>
</tr>
<tr>
<td>EC4 (replacement)</td>
<td>39</td>
<td>75</td>
<td>49</td>
</tr>
<tr>
<td>EC5 (replacement)</td>
<td>1</td>
<td>2</td>
<td>-</td>
</tr>
<tr>
<td>EC6 (added phoneme)</td>
<td>3</td>
<td>12</td>
<td>10</td>
</tr>
<tr>
<td>EC7 (misreading)</td>
<td>-</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>EC8 (permutation)</td>
<td>-</td>
<td>5</td>
<td>-</td>
</tr>
</tbody>
</table>

Table 2: Relative sizes of error classes of consonants shown in word position

9.7 Error patterns in consonant clusters.

In consonant clusters of two phonemes (see p.135-81) the most common error patterns are described in order of frequency of occurrence.

The most common error pattern \( ab\rightarrow b \) occurs seventeen times
in the sixty consonant clusters when the first phoneme in
the cluster is omitted. These mostly occur when the cluster
is in final word position, but also occurs medially when plosives
or fricatives are omitted before an /s/ and the /s/ is
maintained. Other examples occur when
/s/ and /z/ are omitted before /p/, /d/ and /m/ finally
and medially,
/n/ is omitted before /t/, /tʃ/ and /s/ finally,
/l/ is omitted before /t/ in final clusters.

Error pattern **ab→ac** also occurs 17 times and is either unvoiced
or hyper-corrected. It occurs in all positions when
/b/ becomes /p/ before /l/ or /r/ initially,
/g/ becomes /k/ before /r/ or /l/ medially,
/z/ becomes /s/ before /m/ or /n/ medially,
/f/ becomes /v/ before /s/ finally.

Hyper-corrections can occur in all positions when
/p/ becomes /b/ before /l/ initially,
/t/ becomes /d/ before /r/ initially,
/k/ becomes /g/ before /w/ initially,
/t/ becomes /d/ before /n/ medially,
/f/ becomes /v/ before /s/ finally.

Error pattern **ab→cd** occurs nine times where **ab** is unvoiced when
/bd/, /dz/, /vz/, /bd/ and /dz/ become unvoiced finally,
/br/ becomes /pɾ/ medially,
/ʃr/ becomes /s−ɾ/ initially and medially.
Error pattern \texttt{abc\rightarrow ac} occurs eleven times, mainly in final position when

\begin{itemize}
  \item /l/ becomes /r/ after /k/ and /q/ finally,
  \item /\emptyset/ becomes /t/ after /f/ and /n/ finally,
  \item /d\emptyset/ becomes /t\emptyset/ after /n/ in finally,
  \item /t\emptyset/ becomes /s/ after /k/,
  \item /s/ is unvoiced after /n/ medially.
\end{itemize}

Error pattern \texttt{abc\rightarrow c} occurs fourteen times and is mainly a problem of not voicing fricatives and affricates \texttt{a} and omitting /t/, /d/, /s/ and /z/ in final position. Hyper-corrections of \texttt{a} occur when unvoiced dental plosives become voiced before /n/.

Error pattern \texttt{ab\rightarrow a} occurs fifteen times when the last phonemes /t/, /d/, /s/ and /z/ disappear after fricatives and affricate /d\emptyset/ in medial position.

In consonant clusters of three phonemes (see p.181-220) error patterns are described in order of frequency of occurrence. The most common error pattern \texttt{abc\rightarrow ab} occurs ten times in the thirty-six consonant clusters. They all occur in final position when final /\emptyset/, /t/, /d/ and /s/ are omitted.

Error pattern \texttt{abc\rightarrow ac} occurs fourteen times mostly in final position when

\begin{itemize}
  \item /t/, /s/, /k/, /p/, /f/, /t\emptyset/, /g/ and /\emptyset/ are omitted after /k/, /s/, /m/, /n/ and /l/ and before /s/, /\emptyset/, /t/ and
\end{itemize}
and /r/ finally,
/t/ is omitted after /s/ and before /r/ medially,
/g/ is omitted after /n/ and before /l/ medially.

Error pattern abc→dbd occurs seven times and a is l in final position when
/l/ becomes /v/ before /pt/, /ps/, /ts/, /ks/ and /st/,
/l/ becomes /n/ before /šs/,
/l/ becomes /q/ before /ms/ finally.

Error pattern abc→bc occurs ten times in final position mostly as omissions of /l/ and /s/ when
/k/ is omitted before /šθ/,
/s/ is omitted before /pt/, /ps/ and /kw/,
/l/ is omitted before /pt/, /ps/, /kt/, /ks/, /šs/ and /md/.

Error pattern abc→abd occurs eight times in all positions but mostly final and c is replaced with another phoneme when
/r/ becomes /r/ after /st/ and /sk/ initially,
/w/ becomes /r/ after /nt/ medially,
/t/ becomes /s/ after /sk/ and /k/ finally,
/s/ becomes /t/ after /sk/ finally,
/t/ becomes /i/ after /mf/ finally,
/t/ becomes /o/ after /ntʃ/ finally.

Error pattern abc→bd occurs three times in final position when
/l/ is omitted before /k/ and /m/,
/t/ becomes /s/ after /k/,
/d/ is not voiced after /m/,
/z/ is not voiced after /m/.

It can be seen that the omissions or changes in quality of the consonants in clusters are generally parallel to those that also occur when a consonant is pronounced without being in a cluster.

9.8 Conclusion

In both the vowels and the consonants used in the approxixilect spoken by S.V. speakers of A.E., no general universal principle could be established to explain the replacement errors and omissions. My study does not support the explanations of Johansson (1973) who claims that there are universal errors in second language vowels being closer to the centre than they should be in the quadrilateral (see fig.2). Errors were, on the whole, predictable as being caused by direct interference from the first language. There were also errors resulting from misunderstood orthography and grammar, but these did not occur frequently.
CHAPTER 10

ACOUSTICAL ANALYSIS OF CHECKED AND UNCHECKED VOWELS.

10.0 Introduction

There are two kinds of vowels in Vietnamese, and it would seem to be of value to do a short comparative acoustical study of them. The most usual type of vowel in Vietnamese is "unchecked" (unbound), and may or may not have a consonant following. There are nine of these vowels, /i/, /e/, /ɛ/, /a/, /ɔ/, /ə/, /o/, /ʊ/, /u/ (described in chapter 3).

The other kind of vowel is "checked" (bound), and is always followed by a consonant. There are only two of these, /ɛ/ (as in năm /nəm/) and /ʌ/ (as in câm /kʌm/) (described in chapter 3).

As the nine unchecked vowels are similar in intensity, frequency and duration, they have been plotted together in order to obtain their average "shape". In the same way, the two unchecked vowels, which are similar to each other, have been plotted together so that the contrast between the two kinds of vowels can be easily seen (see figs.1&2).

10.1 Intensity

On average, unchecked vowels begin at minus 5 dB, reaching an intensity peak of minus 3 dB at 0.05 second where they remain for a further 0.05 second before finishing at 0.35
FIGURE 1: Average intensity of unchecked and checked vowels

second. In contrast to these, checked vowels begin at minus 2 dB with an intensity peak of zero dB at 0.05 second before falling to minus 3 dB and finishing at 0.1 second.

Unchecked vowels have a somewhat lower intensity than checked. Both kinds of vowels have a peak after about 0.5 second. The longer unchecked vowels peak closer to the beginning of the vowel.

FIGURE 2: Average frequency of unchecked and checked vowels

10.2 Frequency

On average, unchecked vowels have a fairly consistent frequency of 140 Hz, contrasting with checked vowels which have an average
frequency of about 157 Hz. The checked vowels are therefore higher in frequency although their frequency courses are similar in that both are fairly constant (see fig. 2).

10.3 Duration
The unchecked vowels range from /i/ at 0.37 second to /ɛ/ at 0.45 second, averaging a duration of 0.41 second. In contrast to these, the checked vowels range from /ɐ/ at 0.08 second to /ɔ/ at 0.11 second, averaging a duration of 0.1 second. The checked vowels are considerably shorter, being almost a quarter of the length of the unchecked vowels.

10.4 Spectrum
The front checked vowels /i/, /u/, /e/ and /ɛ/ have first formants ranging from /i/ and /u/ at 300 Hz, to /ɛ/ at 500 Hz. The second formants range from /u/ at 1700 Hz and /ɛ/ at 1900 Hz to /i/ at 2517 Hz. The gaps between the formants of these front vowels range from /ɛ/ and /u/ with 1400 Hz to /e/ with 1605 Hz and /i/ with 1663 Hz (see figs. 3 & 4).

The back checked vowels /a/, /ɔ/, /o/, /u/ and /ɔ/ have first formants ranging from /o/ and /u/ at 300 Hz to /a/ at 1000 Hz. The second formants range from /o/ and /u/ at 900 Hz to /a/ at 1500 Hz. The gaps between the formants of these back vowels are closer and range from /a/ with 500 Hz to /o/ with 800 Hz (see figs. 5 & 6).
FIGURE 3: Spectogram of /i/ in di /di/ and /u/ in nu /nu/.
FIGURE 5: Spectogram of /a/ in ba /ba/, /ɔ/ in to /tɔ/ and /o/ in co /ko/.
FIGURE 6: Spectrogram of /u/ in nqu /ŋu/ and /ə/ in mə /mə/.
The two checked vowels have closer formants with gaps similar to the back unchecked vowels, but a somewhat higher frequency than the other nine vowels, with F1 of /ʌ/ being 667 Hz and /ɛ/ being 1100 Hz. F2 of /ʌ/ is 1450 Hz and /ɛ/ is 1557 Hz. The gap between the two formants of /ɛ/ is only 457 Hz and the gap for /ʌ/ is 793 Hz which is almost double, indicating a clearer sound (see fig.5).

As the checked vowels do not correspond in quality with either of the unchecked vowels, no general conclusion could be drawn on the formant frequencies.

Comparing formant bendings for the two kinds of vowels would require an extensive acoustic study which has been considered to be outside the scope of this study.

10.5 Conclusion
The most remarkable difference between the two kinds of vowels is that checked vowels are almost a quarter of the duration of unchecked vowels. Although both kinds of vowels have an intensity peak after 0.5 second (which means that the peak comes earlier in the long vowels), checked vowels have higher intensity than the longer, unchecked vowels. Both kinds of vowels have a fairly constant course but checked vowels have higher frequency, and closer formants than do unchecked vowels.

As can be seen (see fig.6) the distribution of the vowels
FIGURE 7: Spectrogram of checked vowels /ʌ/ in câm /kʌm/ and /ɛ/ in răm /nɛm/.
FIGURE 8: Formant chart showing the vowels of S.V. and A.E.

triangular in shape, but the Australian /i/, /u:/, /y/ and /ɔ/ are more retracted than the S.V. equivalents. The S.V. /ɛ/ and /ʌ/ are more retracted than the A.E. /a/ or /a:/, the nearest approximations being /e/, /u/, /ɔ/, /ɔ/ and /ɛ/.
APPENDIX A

SUBJECTS

Subject 1
Aged 32, male, born and educated in Saigon, but with a slightly North Vietnamese accent. In Vietnam he attended a special high school where he spoke French as a first language. He studied English as a subject for five years to year 11. Following year 12 he continued studying in Saigon university, majoring in the French language. Prior to leaving Vietnam, this subject studied for six months at home in his spare time, and after arriving in Indonesia, studied for three hours a day for three months before coming to Australia. After arriving in Australia in 1985, he did a ten week full time on-arrival English course, followed by 20 weeks of part time evening courses while working in the day. He does not speak much English at work. Last year he started studying part-time at university, but has had no further English instruction. This subject has had no pronunciation classes, and feels very shy about speaking English. He speaks with a strong French accent.

Subject 2
Aged 25, male, born and educated to year 12 high school in Saigon where he studied French as a subject for six years. This subject believes he has a North Vietnamese accent. After finishing high school he went to study English for three nights a week, one and a half hours a lesson, for two years before starting university. At university he studied Russian as a
subject for two years from 1988-90. After arriving in Australia in 1990, he studied in on-arrival English classes four hours a day for twenty days. He has had no previous instruction in pronunciation, and hasn't done any extra study himself, yet was assessed by R.M.I.T. as A.S.L.P.R. 3. This young man has very few pronunciation problems, and claims he has a natural aptitude for languages, which I would certainly agree with.

Subject 3
Aged 27, male, born and educated to year twelve high school in Saigon where he studied French as a subject for six years. He also speaks a little Cantonese and Mandarin. This subject started learning English ten years ago in Thailand with a Canadian instructor for two months, and then in Japan where he learned English for two years from two instructors, one Vietnamese and one Japanese, simultaneously while studying Japanese. After that he studied on-arrival English in Melbourne for one year, before repeating year twelve high school again. He then gained admission to university where he received no further English tutoring or classes. However, in 1988 he attended a ten weeks advanced listening and speaking skills course with the Council of Adult Education, which contained two pronunciation classes.

This subject has the most diversified language background, as well as being the one who expressed the least confidence in his ability to pronounce correctly, even though in his profession he regularly uses English at an advanced level. He believes
he has pronunciation difficulties in his own language, tending to confuse vowels as well as consonants, although he has no difficulty with the tones. He also says he cannot "pick up" tunes in songs easily.

Subject 4
Aged 25, male, born and educated to year 12 high school which included nine years of Mandarin as a subject to year nine, six months of French followed by one year of English (both studied as an extra subject outside of school hours), followed by two years of English as a subject to year 12. After finishing high school he studied Mandarin for a further three years for three hours a week at the same time as studying three classes of English (13 hours a week) for three years, before coming to Australia.

Upon arriving in Australia in 1988 he did four months of full time English in migrant access classes which were really intended for people who had been here for one year. He found he could not speak or hear much at all in these classes which were enormously difficult for him. Following this he studied at a T.A.F.E. summer school for two months before starting university. Here he studied three hours of communication as a subject in first year, while studying a further eight months of Mandarin at Saturday school. This is his final year of university (third year) and he has just finished a two months evening course of two hours, two nights a week advanced English. Although he has not had any previous pronunciation classes,
he has relatively few problems in this area.

Subject 5
Aged 24, male, born and educated in Saigon, speaks with a South Vietnamese accent. He studied to year 10 in Vietnam where he had English as a subject from years six to ten. He arrived in Australia in 1985 where he attended a six months full-time English course before enrolling in year nine high school. He studied E.S.L. to year 12, but had no further English instruction. Presently he is enrolled in second year university. He also has had no prior pronunciation classes.

Subject 2
Aged 27, female, born and educated to year 10 high school in Saigon, but believes she has a North Vietnamese accent. In 1980, she went to Indonesia where she studied very basic English for one year. On arriving in Australia, this subject studied years ten, eleven and twelve E.S.L. in high school before entering university where she received no further English tutoring or lessons. Since finishing her degree she has been speaking English at a professional level in her workplace. This subject has very little problem being understood when she speaks English.

Subject 6
Aged 26, male, born and educated to year 12 high school in Saigon where he studied six years of English as a subject. He speaks with a South Vietnamese accent. After finishing high school in 1982, he continued studying English part time for two hours a week for another five years before coming
to Australia. After arriving in Australia he studied English four hours a day for three months before gaining entrance to university. He is now in third year but has received no further help with English. He has had no previous instruction in pronunciation.

**Subject 7**
Aged 27, female, born and educated to year 10 high school near Saigon, studied six years of both English and Mandarin as subjects and claims she speaks with a South Vietnamese accent. She came directly to Australia in 1987 where she completed a one month English summer school course prior to doing a year of T.O.P., including E.S.L. as a subject. The next year she entered university where she studied spoken and written English language as a subject in first year. She is presently in second year university, but does not receive any further English instruction. She has had no prior help with pronunciation.

**Subject 8**
Aged 27, male, born and educated in Saigon, speaks with a South Vietnamese accent. At high school he studied English (mainly grammar) for three years for about three hours a week. He also studied a little Cantonese at school. In 1987 he used his Cantonese and English while working in the refugee camp in Hong Kong, but he is mainly self taught. After arriving in Australia, he worked for a few months as a social worker.
where he was able to practice his English while studying from two to four hours English a week, at night school. In 1988 he enrolled in T.O.P. where he studied E.S.L. In 1989 he started university and attended written and oral communication, a minor subject in first year. He has received no prior instruction in pronunciation.

Subject 10
Aged 36, male, born and educated in Saigon, speaks with a slight mid-Vietnamese accent because his parents come from central Vietnam.

He studied English as a main subject to year 12 high school for seven years, and French as a second language to year twelve. After this, he studied English for reading as part of a subject for three years, finishing this degree in 1978. After that he had no further English until he arrived in Indonesia where he only studied English for between one and two hours a week for a few months. After arriving in Australia in 1983 he attended a full-time on-arrival English course for three months before enrolling at university. This was a grave mistake as he did not have enough English, or enough money to continue. In 1990 he recommenced university part-time, but has had no other English instruction, only picking it up along the way. He has had no prior pronunciation instruction. His attitude to these classes has been very positive.
### APPENDIX B

**MATERIAL USED FOR AUDITORY ANALYSIS**

<table>
<thead>
<tr>
<th>Vowels</th>
<th>Consonants</th>
</tr>
</thead>
<tbody>
<tr>
<td>/æ/</td>
<td>/k/</td>
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<tr>
<td>/i/</td>
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<td>/ʃ/</td>
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<td>/r/</td>
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<td>/j/</td>
</tr>
<tr>
<td>/ʌə/</td>
<td>/w/</td>
</tr>
</tbody>
</table>

- **Vale**
- **Fail**

300
Consonants

/b/ BAT DABBER
/p/ PAT DAPPER CAP
/t/ TAB FATTER PAT
/d/ DAB ADDER PAD
/k/ CAT BACKER SACK
/g/ GAG MAGGOT
/sh/ CHAT PATCHY MATCH
/dʒ/ JAG MAGIC BADGE
/f/ FIG JIFFY TIFF
/v/ VAT AVID HAVE
/θ/ THIN NOTHING MYTH
/ð/ THEY RATHER BATHE
/s/ SIT MISSILE HISS
/z/ ZIP PIZZA FIZZ
/sh/ SHIP FISHER FISH
/z/ VISION ROUGE
/h/ HAT AHEAD
/n/ MAIN FAMOUS FRAME
/n/ NET BENNY PEN
/s/ SINGER THING
/e/ LEG TELLER SELL
/r/ RED BERET
/j/ YACHT FOYER
/ɔɪ/ WAIT AWAY
ABDUCT  GRABBED
CAPSICUM  MAPS
ABSORVE  RIBS
PATSY  SITS
MIDZONE  NEEDS
PITCHED  HE WATCHED IT
TRUDGED  SHE DODGED AROUND
POINTED  DON'T
SENDER  POND
MENTHOL  TENTH
BOUNCER  ONCE
PANSY  SPOONS
LAUNCHER  PAUNCH
STRANGER  CHANGE
CRAFTY  LIFT
LOVED  SHE MOVED OVER
FIFTH  IT'S THE FIFTH ON THE RIGHT
LAUGHS  HE COUGHS AT NIGHT
MOVES  IT LEAVES ON SUNDAY
BATHED  THEY BOTH TURNED AROUND
LOATHED  SHE CLOTHED US
BATHS  WHO BATHS A BABY?
<table>
<thead>
<tr>
<th>Sound</th>
<th>Word</th>
<th>Translation</th>
</tr>
</thead>
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<td>MAZDA</td>
<td>SHE BATHES IN THE RIVER</td>
</tr>
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<td>DOZED</td>
<td>IT CONTACTS AT THIS POINT</td>
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<td>/kts/</td>
<td>FACTS</td>
<td>SIXTH AGAIN</td>
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<td>/ksd/</td>
<td>SIXTH</td>
<td>HE COAXED US INTO IT</td>
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<td>HAVE YOU CONVINCED US</td>
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<td>SINKS</td>
<td>IT SINKS IN THE MIDDLE</td>
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<td>HELPED</td>
<td>SHE HELPED US</td>
</tr>
<tr>
<td>/lkə/</td>
<td>SUCKED</td>
<td>HE SUCKED IN THE CORNER</td>
</tr>
<tr>
<td>/lps/</td>
<td>HELPS</td>
<td>IT HELPS US</td>
</tr>
<tr>
<td>/lts/</td>
<td>CULTS</td>
<td>THE RESULTS ARE HERE</td>
</tr>
<tr>
<td>/lks/</td>
<td>SUCKS</td>
<td>SHE SUCKS OVER SILLY THINGS</td>
</tr>
<tr>
<td>/lmd/</td>
<td>FILMED</td>
<td>THEY FILMED IT</td>
</tr>
</tbody>
</table>
FILMS  WATCH THE FILMS AGAIN
HEALTHS  SHOW ME THE HEALTH SIGN
WHILST  SHE WILL STAY OVERNIGHT
GASPS  HE LISPS A LOT
GUESTS  THE TOURISTS ARE HERE
GASPED  HE JUST GASPED AND RAN
WHISKED  THE POLICE FRISKED HER
TASKS  PUT THE MASKS ON
NUMBERS

ONE
TWO
THREE
FOUR
FIVE
SIX
SEVEN
EIGHT
NINE
TEN
ELEVEN
TWELVE
THIRTEEN
FOURTEEN
FIFTEEN
SIXTEEN
SEVENTEEN
EIGHTEEN
NINETEEN
TWENTY
FRIENDSHIP

Friends play an important part in our lives, and although we may take the fact of friendship for granted, we often don’t clearly understand how we make friends.

While we may get on well with a large number of people, we are usually friends with only a handful.

Initially, much depends on how people meet, and on favourable first impressions.

As we get better acquainted, we take into account things like age, race, physical attractiveness, personality, economic and social status, intelligence and so forth.

Although these factors are not of prime importance, it is more difficult to relate to people when there is a marked difference in age and background.
REFERENCES

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