The Mispronunciation of English Plosives by Jordanian EFL learners

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Abstract:

Jordanian students learning English experience some difficulties with pronunciation, grammar, and vocabulary. In pronunciation, more specifically, they appear to have problems pronouncing consonant sounds that are nonexistant in the Arabic sound inventory, such as /p/. There is a tendency among these speakers to replace the nonexistant sounds by phonetically similar sounds from their native inventory. In the same line of thought, this study aims at identifying the errors made by Jordanians (students of English) at Yarmouk University, namely the mispronunciation of /p, b/, /t,d/ , /p,b/, in order to (i) identify this error (ii) determine and analyze the causes or the sources of this error, and (iii) try to find out efficient 'Error Correction Aids' to teach these difficult sounds to these students in particular, and to Jordanian learners of English in general.

Key words: Voice Onset Time, Vowel duration variation, Mispronunciation, errors, and phonology

الملخص :

يواجه الطلبة الأردنيون في اللغة الانجليزية بعض الصعوبات في النطق و النحو و المفردات وبالأخص في نطق بعض الأصوات الغير موجودة في اللغة العربية مثل:/ p/ . و من الملاحظ أن البعض منهم يعوضون الصوت الغير موجود في لغتهم الأم بصوت أخر مماثل في العربية. في نفس الإطار إن الهدف من هذه الدراسة هو التعرف على الأخطاء التي يرتكبها طلبة اللغة الانجليزية الأردنيون في جامعة اليرموك في نطق الأصوات التالية:/p,b/ , /t,d/ , /p, b/ قصد (1) تحديد الخطأ (2) إيجاد و تحليل أسباب أو مصادر هذا الخطأ و (3) محاولة ايجاد وسائل مساعدة فعالة لمعالجة هذه الأخطاء و تدريس هذه الأصوات الصعبة لهؤلاء الطلبة خاصة ومتعلمي اللغة الانجليزية الأردنيين عامة.

الكلمات مفتاحية : علم الأصوات, الأخطاء, الأخطاء اللفظية, وقت بداية الصوت, تغيرات مدة حرف العلة

1. Introduction

Many second language learners want to become native-like speakers; however, these learners cannot reach this stage perhaps because of the complication of pronunciation acquisition, in addition to the phonological, lexical and spelling errors they make. Moreover, these errors may be due to the differences between the native language and the learned language, mainly at the level of the phonemic inventory of both languages.

2. A Historical Background to the Field of Error Analysis Theory

In anticipation of late sixties, the major theory regarding the matter of second language learning was behavioristic, which suggested that learning was largely a question of acquiring a set of new language habits. Therefore, errors were considered as being the result of the persistence of existing mother tongue habits in the new language .Consequently, this idea made the researchers of applied linguistics devote their studies largely to the comparison of the native and the target language in order to make explanations about errors. As a result, all errors whatever their origins were dealt with the same technique of further drilling and exercise.

According to Erdogan (2005 : 262), Error Analysis is a branch of Applied Linguistics, emerged in the sixties to demonstrate that learning errors was not only because of the learner's native language but also they reflected some universal learning strategies, as a reaction to contrastive analysis theory, which considered language transfer as the basic process of second language learning as what behavioristic theory suggested. Error analysis, on the other hand, deals with the learners' performance in terms of the cognitive processes they make use of unrecognizing or coding the input they receive from the target language. Therefore, a primary focus of error analysis is on the evidence that learners' errors provide with an understanding of the underlying process of second language acquisition.

3. Literature Review

Lado (1981: 22) states that it is assumed that the student who comes into contact with a foreign language 'L2' will find some of its features quite easy and others extremely difficult. Those similar elements to his mother tongue 'L1' will be easy for him to learn, and those different elements from his native language will be difficult. For instance : Standard Arabic language has a different alphabet from the Latin alphabet that is used in most of European languages. Thus, the pronunciation of a foreign language is often a primary difficulty and this cannot be learned just from reading books, or speaking that language.

However, the recommended method is to get in touch with native speakers, to share talks with them, or to hear the native language; in other words, ' to live in the environment of that language'. As this latter is not possible for every learner of a foreign language, so the teacher may create 'a native-like environment' in the classroom. Mainly by giving his students some phonetics courses and focusing on the difficult sounds to be produced; bringing his students some records of native speakers(from BBC or the British Council) in different situations; that is to say listening courses.

Lado (1957 : 12) adds to the first idea that if the sounds (of a foreign language) are physically, structurally similar and similarly distributed to those of the native language, learning such sounds takes place by easy transfer without problem. But if the phoneme inventory of the target language is not the same with the native language (either in structure or in distribution), learning of such 'new' phonemes occurs slowly and needs more practice.

To crack this phonological problem students most of time substitute an equivalent from their language to the 'unfamiliar' sound of the target language. Several examples of studies of the substitution of different sounds for the dental fricatives of English by foreign learners; for instance, most of French speakers substitute /s/ and / z/ for the English /Ө / and / ð /.

4. Voice Onset Time and Vowel Duration Variation

Keating (1984) defines aspiration or Voice Onset Time (VOT) as: *"the time interval between the release of a stop consonant occlusion and the onset of the vocal-fold vibration and is measured from*

acoustic displays as the time between the release burst and the first quasi-periodicity in the acoustic signal"; if the burst coincides with the beginning of voicing, it is said to be a zero Voice Onset Time. When the beginning of vocal-fold vibration occurs after the burst, it is a positive Voice Onset Time and when the vocal-fold vibration commences before the burst it is a negative Voice Onset Time.
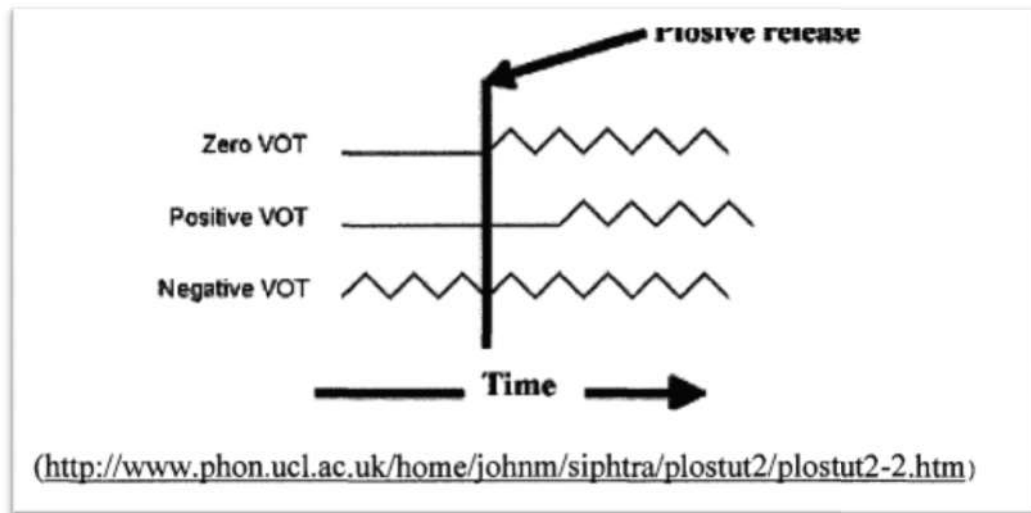

Figure 1: Voice Onset Time - Voicing in relation to the plosive release

The Voice Onset Time (VOT) of stop consonants [p, b, t, d, k, g] differs between languages. "Plus/minus values of the voicing feature will have different quantitative VOT values in different languages (Keating, 1984). For example, a [p] spoken in French or Spanish has a VOT similar to that of a [b] spoken in English. In English, voiceless stops have a positive VOT and voiced stops a zero VOT. By contrast, in French, voiceless stops have a zero VOT and voiced stops a negative VOT.

As far as the effect of voicing on vowel duration is concerned in this study, normally English vowel are short before voiceless sounds and they are long before voiced sounds. The following are the Phonological rules of this feature:

V ⟹ / V: / / --------- [+ voice]

⟹ / V / / -------------- [- voice].

But Arabic accented English seems not to take into consideration this process. Mitleb (1981: 56) says that Standard Arabic did not show a significant effect of voicing on preceding vowel duration either in the long vowel or short vowel. This non significant effect is in agreement with Flege and Port (1981) for Saudi Arabic.

5. Methods, Analysis, and Discussion of Findings

Based on my three years living in Jordan, I observed that Jordanian students usually substitute /b/ for /p/. But it was unclear whether this difficulty is due to the absence of this particular sound from their inventory or to some other reason.

The significance of this study can be presented by the hope that it will add knowledge to the field of Linguistics in general, and to Phonology in particular. It is an attempt to help both the learners of English as a Foreign language and the teachers of English to overcome this common error of mispronunciation.

5.1.Subjects

The subjects selected for this experiment were four Jordanian students aged between 18 and 23 (2 males and 2 females). Their mother tongue is Arabic. All the subjects had been actively involved in studying English as a foreign language since the 6th Grade. Two of the subjects were second year students of English at Yarmouk University, while the other two were third year students. The subjects were selected on a random basis. A native subject was also chosen for the experiment to be used as a reference when comparing Arabic-accented English with native English.

5.2.Test Materials

This study was divided into two parts: experiment 1 deals with aspiration in Arabic-accented English, and experiment 2 is about vowel length in Arabic-accented English.

5.2.1. Aspiration in Arabic-accented English

To ascertain whether Jordanian EFL learners aspirate the voiceless stops /p, t, k/ word-initially, a list of minimal pairs was prepared for the experiment.

/p, b/		/t, d/		/k, g/	
Putt	But	Tip	Dip	cap	Gap

Table 1: a list of minimal pairs (voiceless plosives in initial position).

These minimal pairs include the voiceless stops in position of aspiration and their voiced counterparts. The examples were prepared so as to reflect the presence or absence of aspiration in Arabic-accented English. The subjects were, then, requested to pronounce the given words as they would usually do. The utterances were recorded for analysis.

5.2.2. The Vowel-lengthening Effect of Voicing as it is produced by Jordanian EFL Learners

To study the vowel-lengthening effect of voicing the way it is produced by Jordanian EFL students, a list of minimal pairs was worked out for such purpose.

/p, b/		/t, d/		/k, g/	
Cap	Cab	Bit	Bid	dick	Dig

Table 2: a list of minimal pairs (voiceless plosives in final position).

These minimal pairs include words in which the voiced plosives of English and their voiceless counterparts occur in final position. Thus, the effect of voicing on the preceding vowel can be clearly and precisely measured. The aforesaid list of minimal pairs was presented to the subjects to pronounce.

5.3.Recordings

The subjects were first given a brief account of the study and the role they were supposed to play in it. Afterwards, each participant was requested to pronounce a predetermined list of words. All the utterances were recorded to be later analyzed. It was emphasized that the subjects pronounce the words

naturally. The recording was done in the Speech and Hearing Center at Yarmouk University with the assistance of an expert.

The objective of this study was to identify and analyze the pronunciation difficulties experienced by Arabic speakers with English plosives. Spectrograms were made for all the recordings. The study and analysis of the obtained data focused primarily on ascertaining whether or not aspiration was achieved by the Jordanian subjects. The spectrograms obtained from the Jordanian participants were consequently compared with those of the native speaker of English in order to spot any potential similarities or differences.

5.4. Results and Discussion

As stated in previous research works, Arabic does not show any significant presence of aspiration (El-Hassan, 1989: 85). Thus, Arab EFL students tend not to aspirate the voiceless plosives /p,t,k/ when they occur initially in stressed syllables.

				Duration of aspiration in msecs			
Word	**SD**	**Mean**	**Native Speaker**	**Speaker B**	**Speaker C**	**Speaker D**	**Speaker E**
Putt	9	30	50	29	38	17	37
Tip	7	41	54	39	32	49	43
Cap	11	42	47	37	30	58	38
but	5	15	20	25	35	15	33
Dip	3	22	25	33	30	44	39
gap	7	18	20	35	29	55	35

Table 3: Values of Voice Onset Time of our Experiment.

The findings of our experiment fortify the conclusions arrived at by previous studies regarding aspiration in Arabic-accented English. If we compare the spectrogram of the word 'putt' for our native speaker with that of one of the Jordanian participants, the non significance of aspiration in the utterance of the latter becomes prominently noticeable.

Port 129		VOT in msecs
Word	**Mean VOT**	**SD**
Taas	37	13
Kaas	52	15

Table 4: Adapted from Port and Flege study on Saudis (1981).

Let us assume that Saudi Arabic is the same with Jordanian Arabic and let us compare the two results. We may come out with the following : since the means and VOT of Jordanian accented English and those of Saudi Arabic are almost similar, we may conclude that Jordanian speakers of English transferred the phonological features of stops from their L1 (Arabic) to their L2 (English).

When it comes to aspiration, Arabic- accented English can be persuasively said to be more like Arabic than English; in other words, the effect of the native language on the performance of EFL learners is far greater than that of the target language. This phenomenon, nevertheless, is not restricted to Arab learners as other studies had shown that French learning English tend to face the same problem. This virtual absence of aspiration can be accounted for by the insignificance of aspiration in both French and Arabic.

Concerning the second experiment, the effect of voicing on preceding vowel duration in Arabic is of low significance as previous studies showed (Mitleb :56). Comparing native utterances with those of our Jordanian subjects, we arrived at the fact that Jordanian EFL students do lengthen vowels before a voiced obstruent but compared to native speakers of English the lengthening is too short to be significant. This non-significant effect is in agreement with the Fledge and Port (1981) for Saudi-Arabic.

Word	S D	Mean	Native Speaker	Vowel Duration in msecs			
				Speaker B	Speaker C	Speaker D	Speaker E
Cap	22	145	172	150	140	175	122
Cab	24	162	286	192	183	175	128
Bit	17	102	111	98	125	98	84
Bid	35	118	170	120	168	100	88
Dick	24	133	112	118	159	140	101
Dig	30	149	194	160	174	167	107

Table 5: Values of Vowel Duration in msecs in our Experiment.

As the table above shows, the Jordanian students do lengthen vowels when they occur before a voiced consonant. However, it should be noted that the lengthening effect exercised by speakers, B, C, D, and E is very short compared to that of the native speaker. This is due to the fact that Arabic accented English have different vowel + stop rhyme patterns than English (Port and Mitleb, 1983).

Word	Mean	Vowel Duration in msecs (long vowel)
		SD
Gaat	177	24
Gaad	183	28

ʃaak	167	17
ʃaag	173	22
ʃaab	170	21

Table 6: Adapted from Port and Flege study on Saudis (1981).

Carrying with the same assumption that Jordanian Arabic and Saudi Arabic are similar, and using the findings of Port and Flege (1981), we can point out that the difference in vowel duration in 'gaat' and 'gaad' is too small to be significant (183-177=06 msecs). And the difference in the vowel duration of 'bid and 'bit' in Jordanian accented English is also too short (118-102=16 msecs) compared with that of the native speaker of English of the same minimal pair (170-111=59 msecs). Due to the virtual absence of voicing effect on vowel duration in Arabic-accented English, the Jordanians make greater use of voicing instead (Mitleb: 76).

6. Conclusion

The study's main aim was to see whether the pronunciation difficulty of some sounds that Jordanian students face is due to the absence of these particular sounds from their inventory or to some other reason. An equally plausible answer is that this difficulty arises because of the non significance of aspiration and voicing-stimulated vowel lengthening in Jordanian Arabic, features which are typically associated with the aforementioned sounds. When /b, d, g/ are preceded or followed by voicelessness, they are either partially or fully devoiced. To maintain the distinction, native speakers aspirate /p, t, k/ in initial position and lengthen the vowel preceding the voiced /b,d,g/ in final position. In Arabic, the difference is primarily retained through voicing since voicing-stimulated vowel lengthening and aspiration are of little importance.

In this experiment, we found that Arabs speaking English do not aspirate the voiceless plosives /p,t,k/ where native speakers of English would. They rather resort to voicing to maintain the distinction between /p,t,k/ and /b,d,g/ respectively. This finding goes in line with the contention that foreign-accented English is more like the native language than the target language. Besides, word-final voicing did not have a significant effect on preceding vowel duration in Arabic-accented English. This further confirms the results of previous research which had been done in this respect.

Thus, attaining a native-like pronunciation seems to be very difficult. However, with appropriate training this goal may be reached. This research study pointed out pronunciation difficulties with plosive sounds experienced by Jordanian students when learning English.

The results of this study may provide insights to EFL teachers for the development and choice of instructional methodology, which may improve the teaching of pronunciation of English to Arabic speakers who are interested in improving their pronunciation skills to the point of losing their foreign accent.

7. Limitations of the Study

This research study was limited to the pronunciation of English plosive phonemes /p/, /b/, /t/, /d/, /k/, and /g/, which were identified as problematic for Arabic speakers. The results from this study may be different from studies in which Arabic speakers from other nationalities were being investigated, since the modern spoken variety of Arabic may differ from country to country.

Some of objectivity can be lost in this study because the subjects investigated in this study were aware of the purpose of the research and that they were recorded in order to find mispronunciations in their speech. Therefore, they may have been aware about their pronunciation, and produced less natural speech. Thus, the data collected may not exactly represent the participant's everyday speech.

8. Suggestions for Further Research

Considering the fact that this research study only included four participants, further research is suggested involving a larger number of subjects. An investigation about the influence of the spelling in pronunciation acquisition would be considered complementary to this study, since there has not been much focus on this area. Also, another complementary study would involve identifying and analyzing the stress patterns in Arabic speakers' of English.

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Appendix

'bit' by Native Speaker

'bit' by Speaker D

'bid' by Native Speaker

'bid' by Speaker D
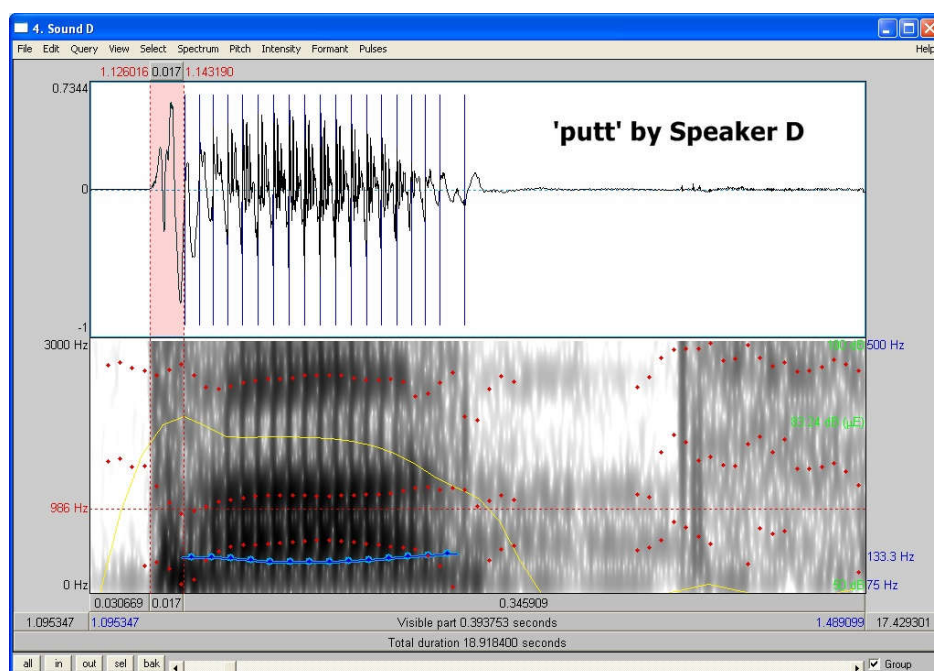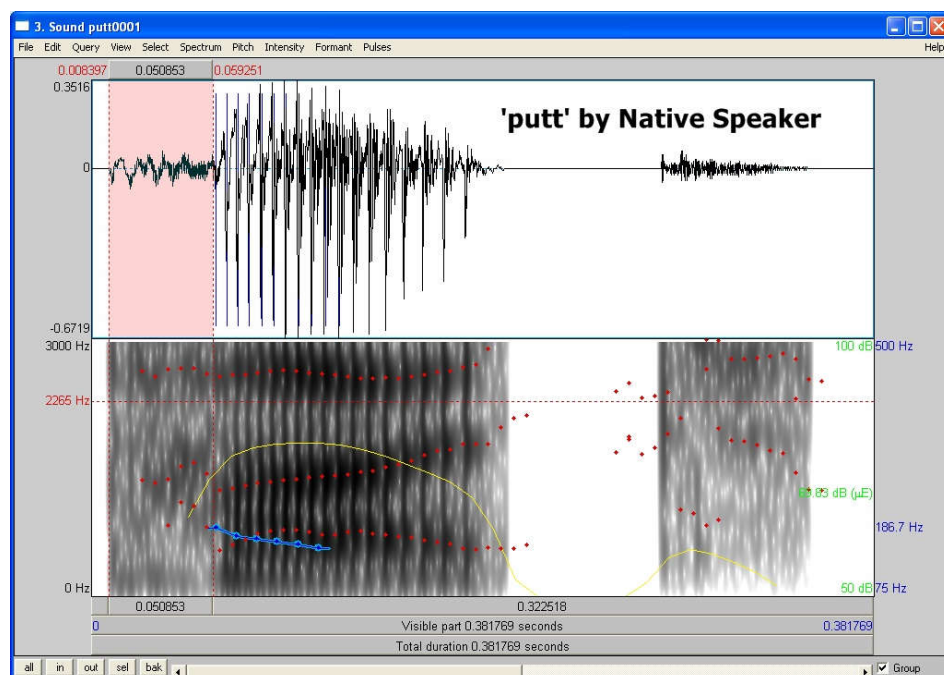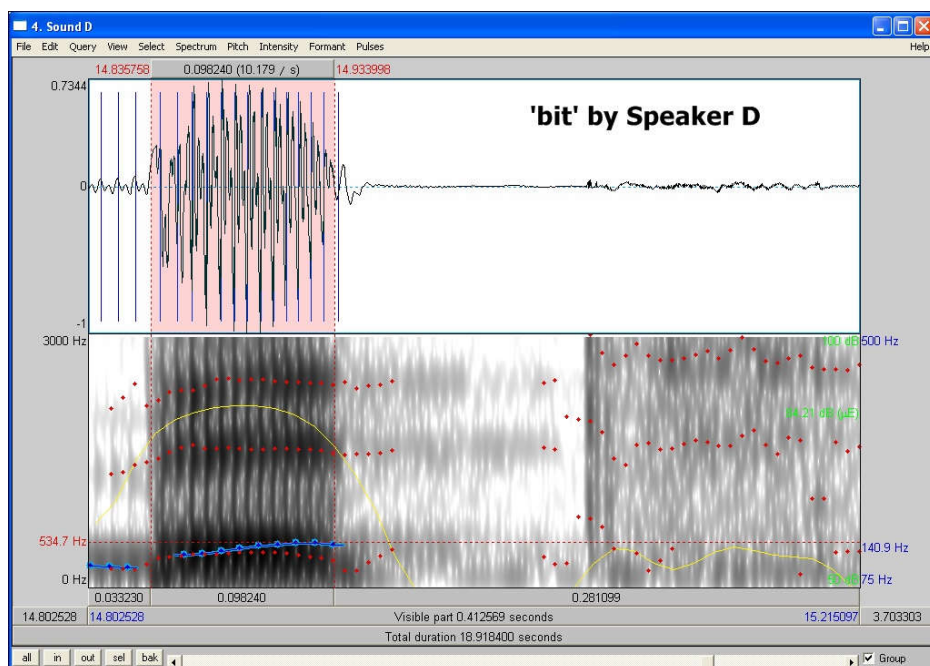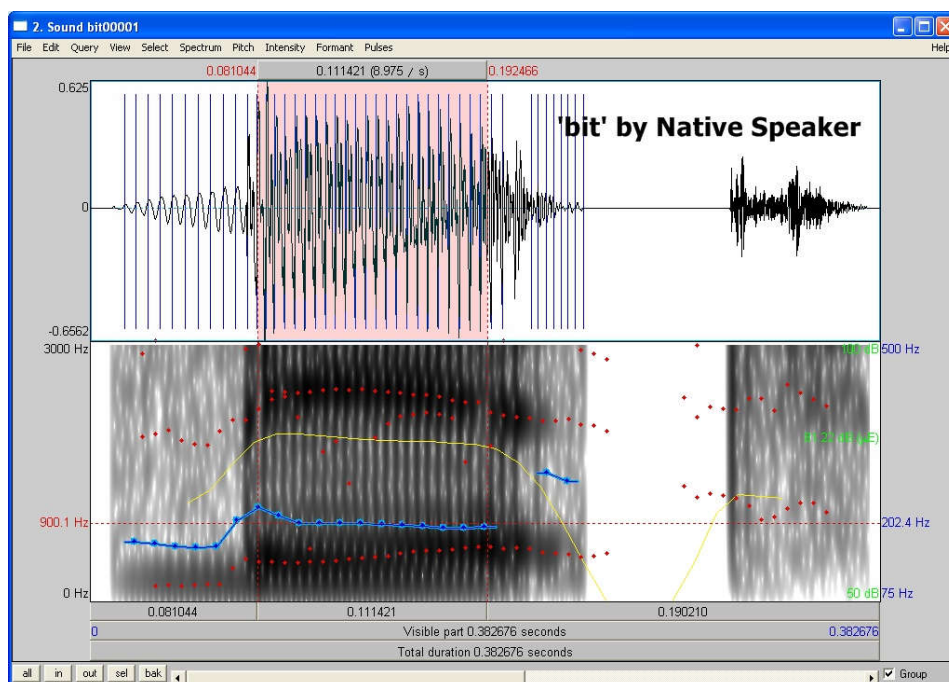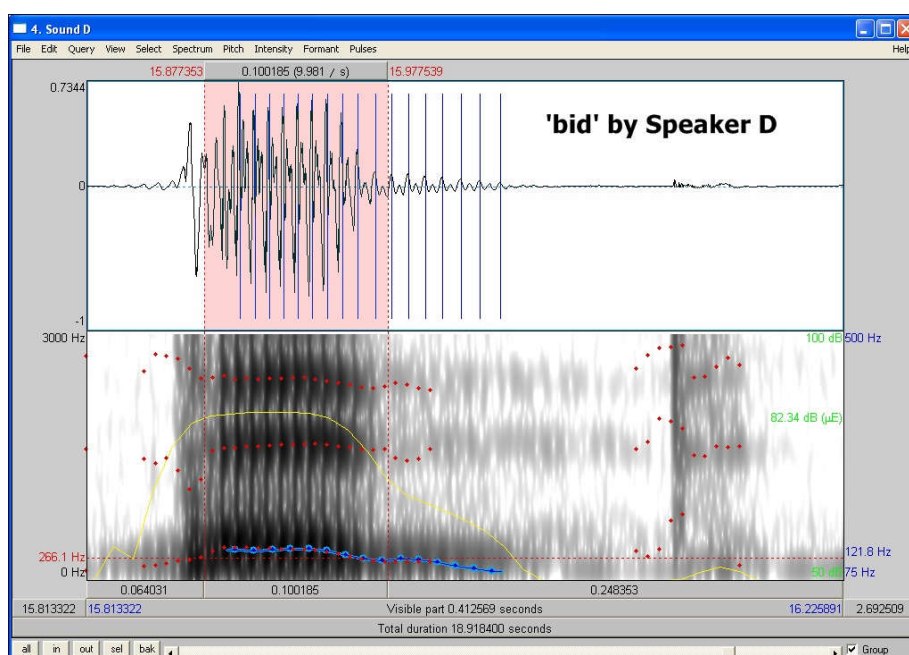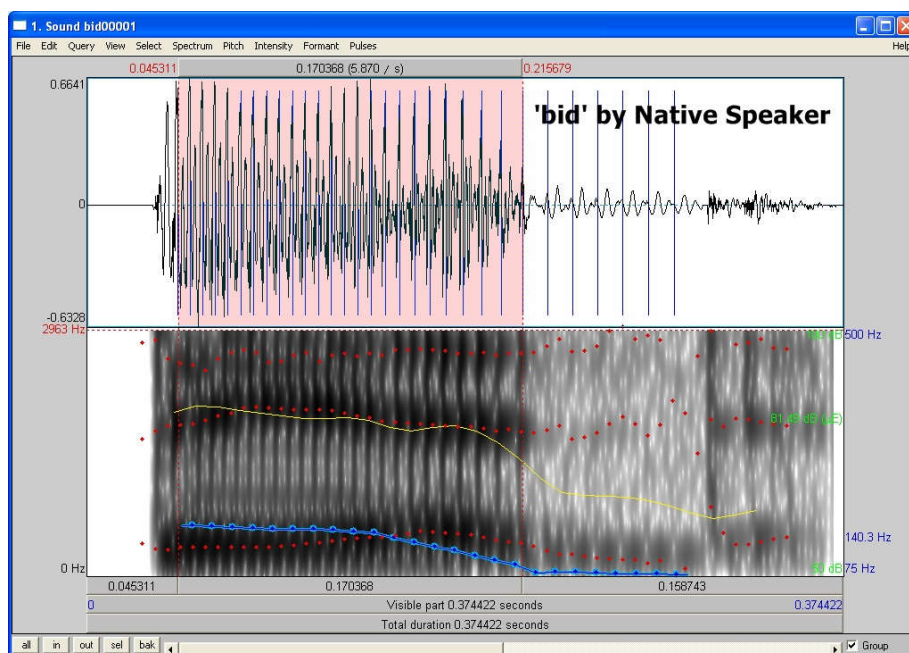
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