# Explicit vs. Implicit Pronunciation Teaching to Greek children: the case of the acquisition of English vowels

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***Abstract:*** The paper discusses the effectiveness of pronunciation teaching of English to Greek state school students aged 16 years old. More specifically, it examines the production of English vowels by Greek learners of English in an English Foreign Language (EFL) context. Two different teaching methods were implemented, which resulted in having two different experimental groups; an explicit vs. an implicit one. The former received explicit teaching of English pronunciation through a variety of activities while the latter was taught implicitly via the use of recasts. The results showed that Greek students of both experimental groups experienced difficulties in producing the target vowels. As regards vowel quantity (duration), it was found that the implicit and control groups produced some target vowel values which were consistent with those of native speakers.
***Key words:*** explicit – implicit pronunciation teaching, vowel production, vowel duration, second language learning

## 1. Introduction

Extensive research on first language (L1) acquisition demonstrates infants' ability to distinguish speech sounds of many different languages, including native and foreign language sounds. However, by the end of the first year of life, infants' nonnative phonetic perception of vowel categories rapidly declines mainly due to exposure to the ambient language. Kuhl et al. proposed the Native Language Magnet Theory (NLM) to account for this reduction putting forth the notion of prototypes (i.e. best category exemplars of a phonetic unit), which function as perceptual magnets attracting neighbouring units which are assimilated by the prototype. Thus, the perceptual space appears to be partitioned into phonetic categories as a result of the magnet effect exerted by the prototypes (Kuhl et al. 1992, 2000).

On account of this initial mapping of the perceptual space into categories, learning / mastery of a second language is difficult to attain, particularly, with reference to phonetic contrasts. Given that, second language (L2) learners are often found to experience difficulty in perceiving and producing vowels in a second language (L2). Contrastive Analysis Hypothesis (CAH), Markedness Differential Hypothesis (MDH) and Speech Learning Model (SLM) are some theories of L2 phonological acquisition, which are used to explain how learners produce nonnative sounds and to what extent they can achieve L2 accuracy (Eckman 1987, Flege 1995). CAH compares languages and distinguishes between 'similar' and 'dissimilar' sounds, MDH puts forth the notions 'marked' (i.e. more complex) and 'unmarked' sounds supporting that the former will be more difficult to acquire than the latter and SLM differentiates between 'new' and 'similar' sounds according to which learning 'similar' L2 sounds can be more challenging than learning 'new' L2 ones, especially for older learners, due to equivalence classification (Eckman 1987, Flege 1987, 1995).

Various studies on L2 phonological acquisition support this by reporting that young learners can be more successful in attaining a nativelike L2 accent compared to older ones (Asher and García 1969; Fathman 1975; Tahta et al. 1981; Flege 1988; Flege et al.

1995). However, a conflicting view holds that highly motivated adult L2 learners are capable of achieving an accent-free L2 (Bongaerts et al. 1997, 2000; García, Mayo and García Lecumberri 2003). What needs to be taken into consideration is that all the above studies refer to immigrants who learn English as a second language.

In contrast, the acquisition of pronunciation in the EFL context seems to be less successful and pronunciation tuition in EFL classrooms has been viewed as '... a luxury...' receiving little attention in many syllabuses (Goodwin et al. 1994).

In response to this need, the present pilot study attempts to examine the effectiveness of the explicit or implicit teaching of the pronunciation of the English vowels to Greek students. Although there are several studies which report on the positive effect of training / explicit instruction on learners' pronunciation (Catford and Pisoni 1970; Elliott 1995; Cenoz and Lecumberri 1999), none of them refer to English acquired by Greek students. Only one study by Koutsoudas and Koutsoudas (1962) examines the differences between the two phonetic systems but no teaching proposals are offered.

Regarding the English and Greek vowel systems, there are important differences between the two languages. The Greek vowel system consists of five vowels (see Figure 1) while the English language is composed of twelve vowels (see Figure 2). Furthermore, differences in quality (i.e. the way the vocalic sounds are articulated) and quantity (i.e. duration) are present in the two languages since Greek lacks a distinction between short – long vowels (Arvaniti 1999).

This pilot study tests three hypotheses. Firstly, based on the theories of L1 phonological acquisition, Greek learners will have difficulty in perceiving and producing the English vowels both in quality and quantity. Secondly, according to the theories of L2 phonological acquisition, Greek students will not produce nativelike L2 vowels. Finally, regarding the teaching methodology, explicit pronunciation instruction is expected to have a positive effect on learners' production of English vowels.

## 2. Methodology
Pilot study
### 2.1 Participants
The present research was conducted at two levels of education; elementary school (6th grade) and senior high school (1st grade). In this paper, I will only discuss the latter since the former is still being analysed. Fifteen 16-year old students participated in this experiment. The subjects were selected based on their answers to a questionnaire. This was to ensure that all participants came from Thessaloniki, were monolingual speakers of Standard Modern Greek, had been taught English as a foreign language at school for six years and had the same proficiency level (B2, according to the Common European Framework of Reference for Languages (CEFR)). It is noteworthy mentioning that all students reported that they had been taught English pronunciation in the past but it was occasional and not systematic.

With reference to the students' age, older adolescents were chosen in order to test whether older learners can acquire an accent-free L2. According to Patkowski (1990), after the age of 15, learners seem to lose the ability to achieve proficiency in L2 pronunciation. Yet, bearing in mind studies on L2 phonological acquisition, which provided results of older learners attaining a nativelike L2 accent, it seems possible that Greek students may follow the same pattern.

### 2.2 Teaching
This experiment consisted of two experimental groups, an explicit and an implicit one, and a control group. The explicit group received explicit teaching in the pronunciation

of the English vowels through a variety of activities such as listen and repeat, sound maze, vowel discrimination activities, cued dialogues, categorisation activities, bingo, information gap activities, chain drills, role plays and student generated limericks (Celce-Murcia et al. 1996). On the other hand, the implicit group was taught the English pronunciation implicitly via the use of recasts (i.e. the reformulation of the learner's immediately preceding erroneous utterance while maintaining his or her intended meaning) (Ammar and Spada 2006). More specifically, students received extensive speaking practice on various topics such as education, environment, technology, transport, tourism, fashion etc. Throughout the lesson the teacher recasted the erroneously pronounced words without correcting any grammatical or vocabulary mistakes. Finally, the control group received no pronunciation instruction.

On the subject of the actual tuition of the pronunciation of the English vowels, 29 mini pronunciation lessons were held (15 minutes each – 3 times a week), embedded in the regular English class at school. Both experimental groups were taught pronunciation, elaborating on the Standard American accent, by an American teacher for a period of 2½ months. The framework used was the one proposed by Celce-Murcia, Brinton and Goodwin (1996) 'A framework for teaching pronunciation communicatively' which moves from controlled and guided activities to more communicative ones.

## 2.3 Speech material and recording technique
Both the English and the Greek recording material consisted of a list of short sentences containing words with the English and Greek vowels respectively. The English material was of the form /'pVC/ or /'bVC/ with Vowels = /ɪ, iː, e, ɑː, æ, ʌ, ɜː, ɔː, ɑ, ʊ, uː /and Consonants=/t/ (appearing after the vowels tested) (pit, peat, pet, part, pat, but, pert, port, pot, put, boot) embedded into a carrier phrase 'Say _ again'. The Greek speech material was of the form /'pVCV/ or /'bVCV/ with Vowels = /i, e, a, o, u/ and Consonants=/t/ (appearing after the vowels tested) (πίτα /'pita/, πέτα /'peta/, πάτα /'pata/, πότα /'pota/, μπότα /'bota/, πούτα /'puta/, μπούτια /'butça/) set in the carrier phrase 'Λέγε _ πάλι' (/'lege _ 'pali/). What needs to be pointed out is that the Greek material contained both real and nonsense words.

For the recordings, a PMD 660 Portable Solid State Recorder was used. The recordings took place at the students' school. Overall fifteen students were recorded (5 students × 3 groups) twice − before and after teaching − so as to test whether pronunciation instruction was effective or not. Moreover, five Greek native speakers and five bilingual Greek-American ones were recorded producing the Greek and English vowels respectively, for reference data.

## 2.4 Data analysis
The recordings were transferred to a computer and were analysed through the PRAAT programme. The first two formants and the duration of the vowels were measured from wide-band spectrograms. More specifically, F1 and F2 were measured at midpoint and for the duration two annotation points were identified: vowel onset and vowel end. Each vowel was repeated 5 times, but only 4 repetitions were measured. In total, 2050 vowel tokens (1925 English and 125 Greek) were analysed for this experiment. In addition, statistical analysis was conducted in order to compare the groups and explain the differences between them.

## 3. Results and discussion

*3.1 English vowels produced by Greek learners: quality*

Figures 1 and 2 show the mean values of the first two formants of the Greek and English vowels produced by Greek and American speakers respectively.

**Fig. 1 Mean values of F1 and F2 (in Hz) of the Greek vowels produced by Greek speakers**
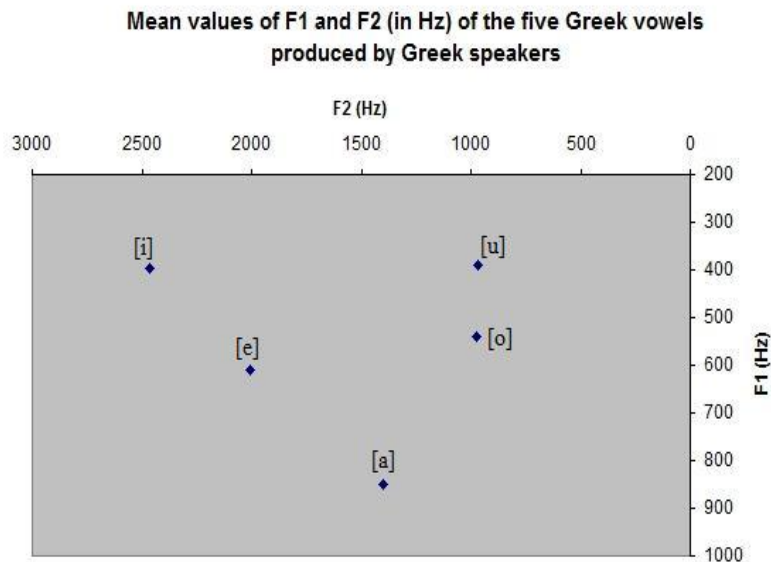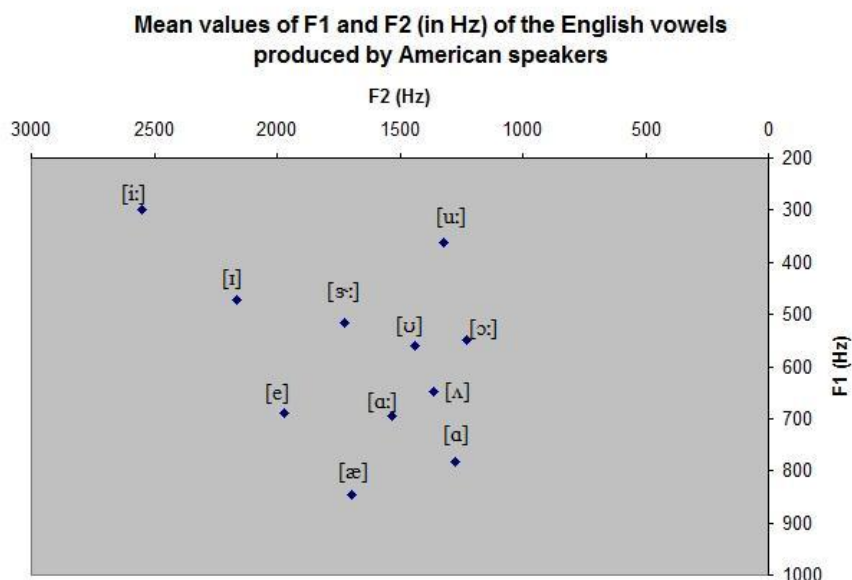


**Fig. 2 Mean values of F1 and F2 (in Hz) of the English vowels produced by American speakers**



Figures 3-5 show the mean values of the first two formants of the English vowels produced by Greek learners of the explicit, implicit and control groups respectively before and after pronunciation instruction.

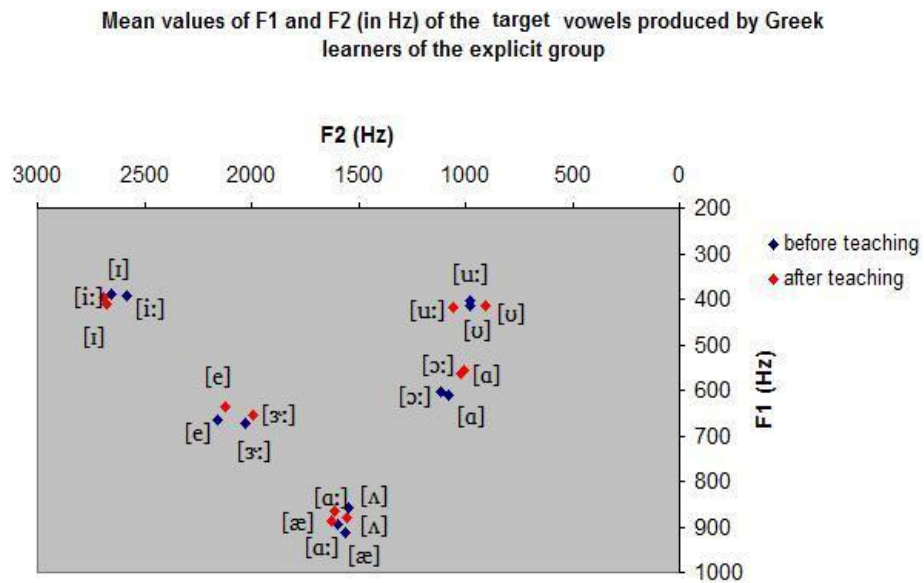**Fig. 3 Mean values of F1 and F2 (in Hz) of the target vowels produced by Greek learners of the explicit group**

Mean values of F1 and F2 (in Hz) of the target vowels produced by Greek learners of the explicit group

**Fig. 4 Mean values of F1 and F2 (in Hz) of the target vowels produced by Greek learners of the implicit group**
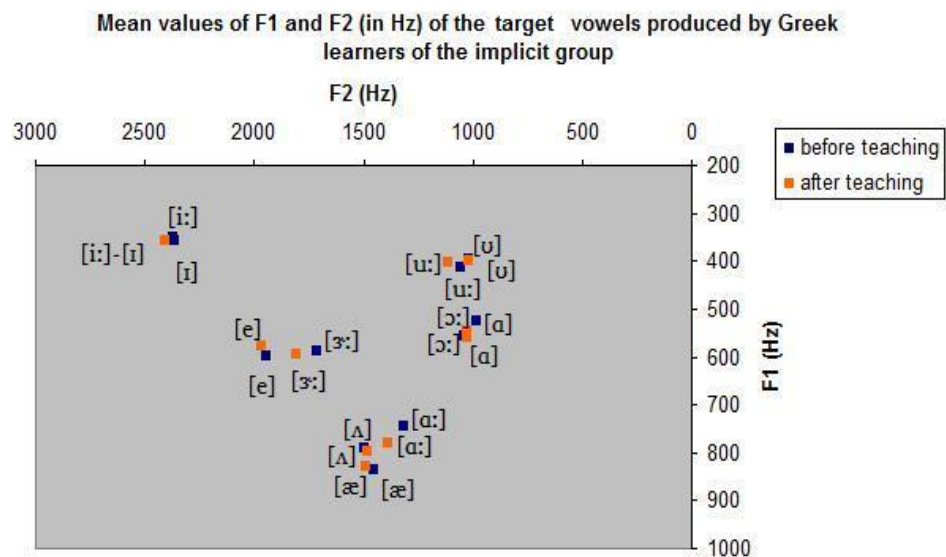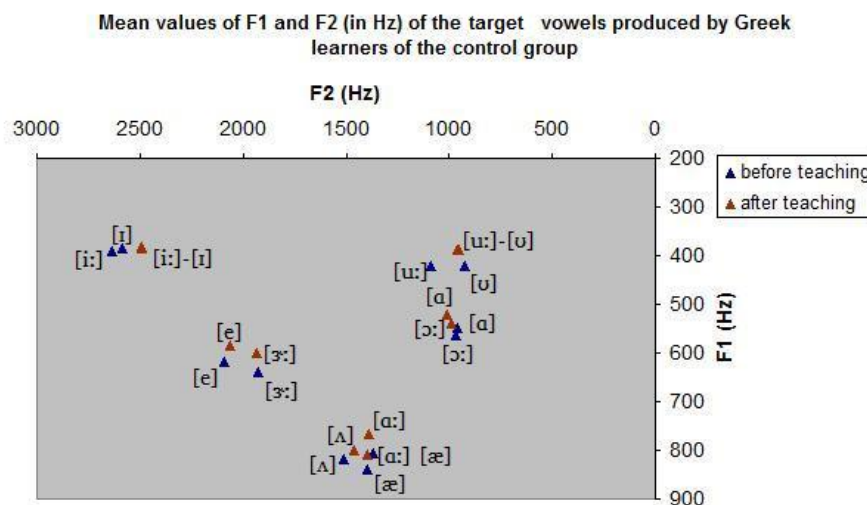
Mean values of F1 and F2 (in Hz) of the target vowels produced by Greek learners of the implicit group

**Fig. 5 Mean values of F1 and F2 (in Hz) of the target vowels produced by Greek learners of the control group**



Mean values of F1 and F2 (in Hz) of the target vowels produced by Greek learners of the control group

One can observe that there is no significant improvement in any of the three groups in the production of the target vowels after teaching. If we look closer to the three Figures, we can see that the Greek students do not differentiate between the short /ɪ/ and the long /iː/ in the words 'pit' and 'peat' respectively. Instead, they seem to use one vowel to produce both target words. The same pattern seems to apply to /uː/ ('boot'), /ʊ/ ('put'), /æ/ ('pat'), /ʌ/ ('but') and /ɑː/ ('part'). As regards the /ɔː/ ('port') and /ɑ/ ('pot') sounds, again, the Greek learners do not seem to distinguish between the two target vowels. What is more, the students were found to produce the word 'pot' using a vowel close to the /ɒ/ quality instead of the /ɑ/ target vowel. Pertaining to the /e/ ('pet') and /ɜː/ ('pert') sounds, although there appears to be a difference in the quality of the target vowels produced by the Greek learners, it was not found to be statistically significant. Finally, looking at the Figures 3-5, we could say that the grouping of the target vowels produced by the students seems to approach that of the Greek vowels. All in all, one could argue that the Greek learners of all three groups appear to have difficulties in producing the target vocalic sounds and show a tendency to produce the L2 vowels in terms of their L1 ones. This preliminary finding seems to be supported by literature. In his doctoral thesis, Lengeris (2009) investigated the acquisition of English vowels by Greek speakers and found that in most cases Greek speakers classified more than one L2 vowel to the same L1 category.

*3.2 English vowels produced by Greek learners: quantity*
With reference to the English vowels' durational measurements, Figures 6-8 present the duration values of the target vowels as produced by the three groups of learners (explicit, implicit and control respectively).

**Fig. 6 Mean values of the duration (in ms) of the target vowels produced by Greek students of the explicit group and American speakers**
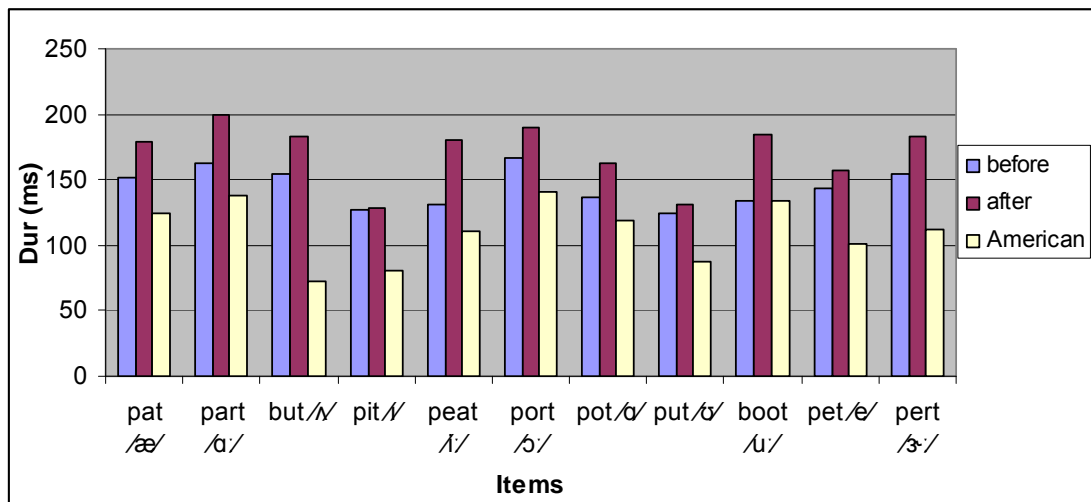


Examination of the data in Figure 6 showed that the duration values of the target vowels produced by the explicit group after teaching were generally much longer compared to those before instruction and those of the native speakers. In order to test whether these values were further away form the target ones, we ran statistical analysis. It was found that indeed all vowel duration vowels (e.g. /æ, ɑː, ɔː, ʊ, e, ʌ, iː, ɑ, uː, ɜː/) but one (/ɪ/), were statistically significant (p < .05) (before-after tuition and after teaching-American). Yet, this significance was negatively related to the degree of nativelikeness. To qualify whether these measurements were nativelike, we used the Standard Deviation criterion according to which the mean value of the tokens for a given vowel has to be less than or equal to the Native English mean duration value for the tokens of that vowel plus one standard deviation (Birdsong 2007). Spelling out the nativelikeness criterion for some vowels, for /æ/, the mean of the four tokens must be ≤ 129 milliseconds (NE mean 124 milliseconds + standard deviation 5 milliseconds = 129 milliseconds); for /ɑː/, the criterion is ≤ 144 milliseconds (138+6); for /ɔː/ ≤ 147 milliseconds (141+6). Based on this criterion, it was found that the mean target vowel durations of the explicit group were far longer than the native ones and therefore were classified as nonnative. It is noteworthy to mention that all target vowel duration values except for one (/uː/ ≤ 139 milliseconds) before teaching were also classified as nonnative in line with the aforesaid criterion.

A possible explanation to account for this result may have to do with the way of teaching. It may be the case that a lot of emphasis was put on vowel quantity than vowel quality mainly through visual stimuli. Furthermore, the teacher had the tendency to exaggerate vowel duration in order for the students to comprehend vowel lengthening easily (at least during the first stages of teaching). Moreover, it could be that the students, in their attempt to correspond to the task properly, tended to overuse this feature not only for long vowels but also for short ones. Still, despite the fact that there seems to be no positive improvement in the production of the English vowels (both in quality and quantity) through explicit instruction, we should bear in mind certain limitations. Students were taught English pronunciation in a foreign language setting

which means that there was limited time to conduct the teaching and limited exposure to the target language.

To this aim, future research will focus on amending certain points such as extending the period and actual time of teaching, provide students with more detailed phonetic practice, more authentic input and many more communicative activities which will allow learners to practice the L2 extensively.

The pattern seems to be slightly different for the vowel duration values produced by the implicit group, in Figure 7.

**Fig. 7 Mean values of the duration (in ms) of the target vowels produced by Greek students of the implicit group and American speakers**
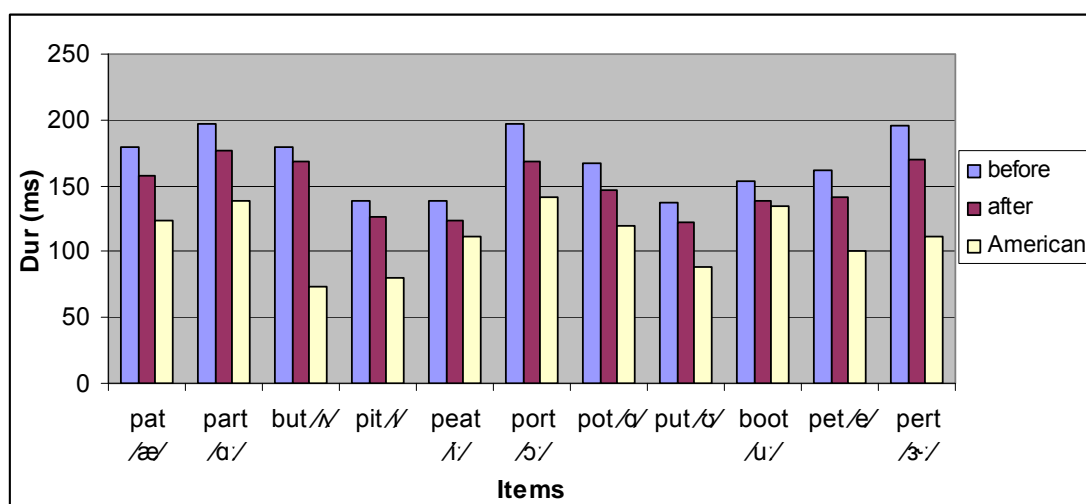


One can observe that all values seem to be systematically reduced after teaching. Again, in order to test whether these target vowel measurements are a sign of improvement, we ran statistical analysis which showed that certain vowel duration values (e.g. /ɑː, ʌ, ɔː, ɜː, e/) were statistically significant (p < .05) (before-after teaching and after tuition-American). Nonetheless, based on the Standard Deviation criterion for nativelikeness, these durational measurements could not qualify as nativelike ones. The only exceptions were the /uː/ ('boot') target vowel duration which fell within the standard deviation (/uː/ ≤ 139 milliseconds) after teaching and was classified as nativelike; and the /iː/ ('peat') target vowel value which was found to be very close to the standard deviation (/iː/ ≤ 117 milliseconds) after instruction and could qualify as near nativelike.

One reason to account for these near native like durational values may have to do with the type of corrective feedback technique used to conduct implicit teaching; that of recasts. The research results support the effectiveness of recasts in relation to language teaching. Recasts are thought to facilitate L2 learners to notice the difference between their non-nativelike utterance and the nativelike reformulation. Given that they are implicit and unobtrusive, they help L2 learners by providing a correct model while maintaining a focus on meaning (Ammar and Spada 2006). However, there are researchers who argue that recasts are ambiguous due to the fact that a teacher's recast of a student's erroneous utterance may be perceived by the latter as a mere repetition of his utterance and not a correction (Lyster and Ranta 1997, Lyster 2004). Our preliminary results do not seem to provide adequate evidence either in favour or against

the positive effect of recasts regarding vowel quantity. It is worth mentioning, though, that the implicit group received extensive speaking practice (for some students were taking the FCE examination) through which English pronunciation was taught. It may be the case that speaking, given that it was exam-oriented, motivated students making them more fluent which led to better flow of speech which in turn led to nativelike vowel durational values. Lastly, the frequency by which the vowel sounds were corrected by the teacher may have played a role in producing target vowel durations.

Finally, examination of the data of the control group in Figure 8 showed that there were minor differences in the vowel duration values before and after teaching.

**Fig. 8 Mean values of the duration (in ms) of the target vowels produced by Greek students of the control group and American speakers**
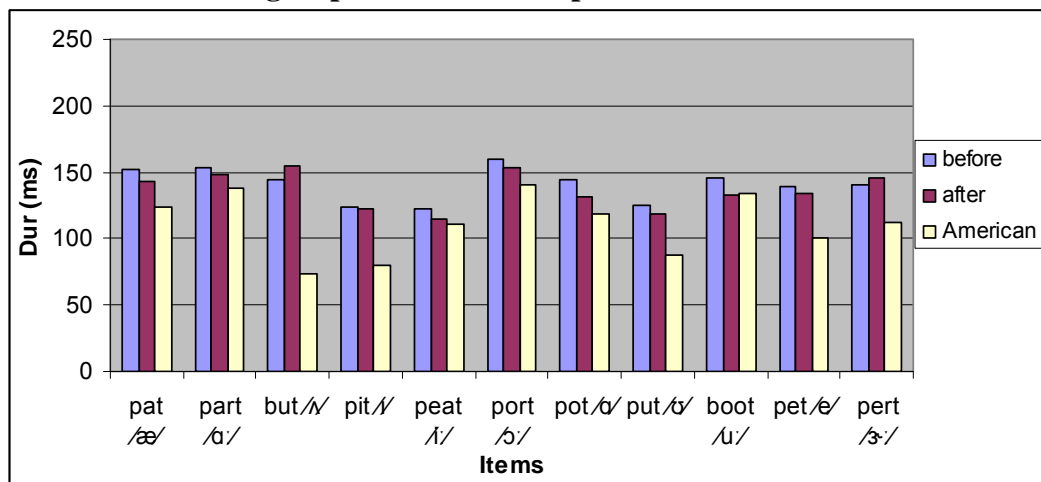


Bearing in mind the aforementioned criterion, it was found that almost all the target vowel duration values were categorised as nonnative. What is striking, however, considering that this group did not receive any pronunciation tuition whatsoever, is that three target vowel values, /ɑː/ ('part'), /iː/ ('peat') and /uː/ ('boot'), were found to be consistent with those of the native speakers and therefore were classified as near nativelike and nativelike respectively, (/ɑː/ durational value was found to be very close to the standard deviation after teaching, /iː/ and /uː/ durational values were very close to the standard deviation prior to teaching and within the standard deviation after tuition). One way to interpret this rather unexpected result may have to do with the teacher of this group. An uncontrolled variable of this pilot study was the fact that the two experimental groups and the control one were not taught by the same teacher. There is the possibility that the teacher of the control group used activities and tasks which unconsciously affected students' target vowel duration values.

Adding to the previous possible explanations of these preliminary results, we should include the 'feature hypothesis' as implied in Speech Learning Model (SLM) (Flege 1995) and the 'desentization hypothesis' proposed by Bohn (1995). The former states that L2 features which are not used contrastively in L1 will pose difficulties to L2 learners when perceiving and producing L2 speech sounds. Based on this, Greek students will not be successful in using temporal cues (as well as spectral cues) when acquiring the target vowels since Greek does not use vowel duration to signal a phonological contrast. Hence, the failure of the learners of the explicit group to perceive and produce L2 vowel duration values. On the other hand, the fact that duration, a feature that is not found in the Greek language, seems to be partly available and

exploited by Greek learners of the implicit and control groups for the English vowels /uː/, /iː/ and /ɑː/, could lend partial support to Bohn's desentization hypothesis. He hypothesized that speakers with no L1 vowel duration distinction can still use durational information to differentiate L2 vowels when spectral cues are not available, since temporal cues are more salient and easily accessible (Bohn 1995).

Given these two conflicting hypotheses and the fact that these are results of a pilot study, it is difficult to draw robust conclusions. More research is required in order to either reject or confirm the aforementioned assumptions.

## 4. Conclusions

This pilot study investigated the effectiveness of the explicit vs. implicit pronunciation teaching of the English vowels to 16 year-old Greek students. On the whole, Greek learners (of all groups) were found to experience difficulties in producing nativelike target vowels as to their quality. Pertaining to vowel quantity (i.e. duration) it was found that the Greek students of the implicit and control groups produced nativelike vowel duration values. However, this cannot constitute a robust piece of evidence as to the effectiveness of implicit teaching and recasts in particular since other factors, such as motivation, should be added in. A more thorough planning of the activities used and implementation of the teaching techniques, in general, are required. Finally, it is worth pointing out that these are results of a pilot study and therefore could not comprise categorical conclusions. Further research is underway in order to get a clearer idea concerning vowel production and perception, vowel duration and degree of effectiveness of explicit / implicit pronunciation teaching.

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