PRONUNCIATION ACQUISITION PATTERNS OF LEARNERS WITH DIFFERENT STARTING LEVELS

DICK SMAKMAN
Leiden University, Netherlands
d.smakman@hum.leidenuniv.nl

THOMAS DE FRANCE
HU University of Applied Sciences Utrecht, Netherlands
thomas.defrance@hu.nl

Abstract
This study described the results of an investigation into the effect of an intensive 12-week pronunciation course in British English which 30 Dutch female 1st-year university students of English took. They read out the same text before and after the course. Each student's 'before' and 'after' tests were recorded. Before analysis of their results, students were split up into three groups on the basis of their general starting level: high, intermediate and low. The analysis involved a before- and after comparison of the pronunciation of eleven different phonemes: /æ, ɒ, ɔː, ʌ, ʊ, ð, θ/, medial /t/, coda /r/, and syllable-final /d, v/.The analysis was done by means of both auditory and acoustic analysis. Four degrees of success (or lack thereof) were defined. The results show that the consonants required the least effort, as they were already relatively acceptable before the course started. This was true of students in general, regardless of initial starting level. The three levels of students are most distinguishable on the basis of the development of the consonants during the course. The weaker students' consonants in particular benefitted from the course.The research revealed that initial level can be used to predict the trajectory of improvement. A general conclusion is that teachers may recognise types of students before the course starts and subject them to different types of teaching.

Key words: SLA, English, phonetics, pronunciation, pedagogy, inter-learner variation

1. Introduction

1.1 Background of the study

English pronunciation teaching has received less and less attention at Dutch universities in recent years. While in the past English departments at universities in the Netherlands generally taught pronunciation explicitly, often combined with a course in general phonetics, the practical aspect of pronunciation is increasingly left untouched. One reason in favour of not meddling with Dutch students' pronunciation habits is that without such interference they often tend to sound intelligible anyway; more so than ever, students are able to produce good imitations of English, owing to increased

availability of media sources, especially television and the internet. For these reasons the need for students to receive specific pronunciation instruction in a formal course has decreased. It is nevertheless striking how English departments are starting to give up specific instruction in how to produce target sounds according to strict guidelines, and are beginning instead to expect students to rely on their own intuitions.

While, traditionally, learning British English is the unofficial norm in the Netherlands, a by-product of the development described above is that the Dutch are increasingly developing their own way to pronounce English, which bears a strong resemblance to so-called Mid-Atlantic English (Van der Haagen, 1996). The currently evolving style of English pronunciation in the Netherlands combines, if inconsistently, British and American features (hence the term Mid-Atlantic) in addition to the obvious Dutch ring that one would expect these speakers to have. Much of the time, learners are not aware of their own inconsistencies in this respect.

Another reason for giving up on explicit pronunciation training is the question of teachability combined with the time-consuming nature of such teaching. The skill of pronunciation is considered to be difficult to acquire (see Pennington, 1989; Purcell & Suter, 1980; Smakman, 2015), and even teachers and lecturers sometimes find themselves unable to explain why sounds should be pronounced in a certain way. Not only do teachers often lack the phonetic and sociolinguistic background to do so, but their own accent may be suffering from the very issues described in the course book. Finally, the motivation to explain how to finely tune a student's pronunciation might be low if intelligibilityis not an issue.

Aside from the current trend, however, English departments at some universities in the Netherlands do still teach pronunciation explicitly in a designated course, and these universities feel that both a theoretical and practical understanding of pronunciation makes for better academics and better teachers. The current article takes as its point of departure a setting in which pronunciation is taught explicitly.

1.2 Pronunciation issues of Dutch learners

Gussenhoven & Broeders (1997) and Collins et al. (2011) describe the pronunciation issues that Dutch learners of British English generally face. While most phonemes are generally clearly and unambiguously pronounced by learners, some phonemes are problematic in the sense that they are strongly deviant from the RP target while in some cases they even cause confusion amongst listeners. The most important ones are listed below, and these are also relevant for the current investigation.

The /æ/ vowel is typically too close and replaced by the Dutch vowel /ɛ/. The phoneme /ɒ/ is often substituted by Dutch /ɔ/ and is too tense, with lips that are too rounded and the tongue pushed too far back. In addition, some speakers tend to replace /ɔ/ with /ɑ/. The vowel /ɔː/ is often too open, and the vowel /ʌ/ is often replaced by /ɔ/ or a vowel that is rather front and close and has strong lip rounding. The vowel /ʊ/ is often replaced by a sound similar to /u/ and is too close, back, rounded and tense. Dutch learners of British English often struggle with certain consonant issues as well. They often replace English syllable-final voiced consonants with their voiceless counterparts. As a result, the consonant /d/, for example, is often phonetically neutralised with /t/. Target consonant /v/ is also typically pronounced without voice if it occurs syllable-

finally and it tends to be more tense and end up being neutralised with /f/. The consonants /ð/ and /θ/ do not exist in Dutch. Learners tend to use alveolar stops instead (/d/ and /t/, respectively) and the target /θ/ sometimes even comes out as /f/ or /s/, although this latter pronunciation seems to be more and more rare. Medial /t/ is often 'flapped' (pronounced as [ɾ]) and postvocalic coda /r/ is often pronounced (usually as an approximant), rather than being deleted (which would be in accordance with the RP norm).

1.3 Phonemes before and after training

De France & Smakman (2013) and Smakman & De France (2014) investigated the effects of a pronunciation course at a Dutch university (Leiden). These two publications established the effects of pronunciation training by comparing phonemes of learners before and after a 12-week pronunciation course in British English. They did so for vowels and consonants separately.

The results in these two publications showed that an individual learner's progress in the production of each phoneme acts separately; if a learner is able to successfully learn one phoneme, this does not guarantee the same results for another, even if that other phoneme has similar articulatory characteristics. Another finding was that focussing on specific pronunciation features is of no avail: e.g., place of articulation, manner of articulation, voicing, vowel openness. Instead, individual phonemes – rather than features – need to be practised. In the end, getting the target phoneme right depends on the degree of markedness of the given phoneme, its articulatory degree of difference from equivalents in the L1, and possible other factors. But even then, certain phonemes which one would expect to be difficult because they require an articulation that is foreign to the learner do not require the effort that the literature would predict. For example, contrary to what literature in the field suggests, primarily Collins et al. (2011) and Gussenhoven & Broeders (1997), the two De France/Smakman publications show that the fact that a certain phoneme does not exist in the source language does not necessarily mean that there will be problems producing it in the target language. One case in point is that of the two interdental consonants, /ð/ and /θ/. While De France and Smakman (2013) were able to confirm the claims made in past literature that the voiced sound /ð/ is indeed difficult for Dutch learners, their findings led them to the conclusion that the voiceless equivalent, /θ/, was not difficult to master after training, and oftentimes, especially in the case of the more advanced learners, did not require any training at all.

1.4 Initial ability levels

In preparing for the experiment, on which the previous two studies and the present one are based, the "playing field" of participants had been levelled as much as possible to make for a controlled testing environment; i.e., age, gender and regional background. The one question of individual variation left open was that of each learner's general starting level of English pronunciation. Indeed, the conclusions we would later come to in our first two analyses suggested that, based on the starting level of the student, his or her needs could be determined on the basis of an experienced teachers' assessment of the

level of individual learners before the course. Given that the main focus of the first two publications was not the development of the pronunciation of individual learners – the pathway or trajectory they took – but instead looked at the development of the target phonemes themselves, we did not elaborately treat the subject of initial level. This subject is the focus in the present investigation.

The question may be why one might find it relevant to focus on the initial 'ability level' of the learner. First, it is an attempt to account for some of the unexplained results regarding the development of individual phonemes in the course of the training which we report on in the previous two studies. The second is what teachers may learn from these findings, so that in the future their lessons could take into account the possibility of differentiation when it comes to teaching the reproduction of the target phonemes. This latter issue is tentatively addressed in the Discussion; splitting groups up on the basis of level and learner type.

2. Research question

The current research aims to establish learner types on the basis of comparing individual learner's progress in producing target phonemes with their general starting level. Combining the results of consonant acquisition (De France & Smakman, 2013) and vowel acquisition (Smakman & De France, 2014), this investigation tries to reveal patterns within three general levels of learners. To find this out, the following research question was defined: 'What are the patterns of acquisition of individual phonemes by students whose starting level is high, low or intermediate?'

3. Methodology

3.1 Background

Like a few remaining English departments in the Netherlands, the Leiden University English department still teaches a pronunciation course to first-year students, and students can choose American or British pronunciation. The large majority choose British English and those who do not express a preference are also put in the British pronunciation lab. The current research focuses on the British pronunciation course variant.

3.2 Speakers

The speakers in the experiment were thirty Dutch natives. They were 18 to 20 years old, all female, and all first-year students of English Language and Culture at Leiden University. The speaker group was thus kept as homogenous and representative as possible (typically, female students in this age range are the most numerous within the department). Most of them came from the southwest area of the Netherlands, where the

university is located. Their native speech was generally Standard Dutch with minor regional traces.

Five native speakers of English served as the control group. Deterding's (1997) data were used for this purpose, as his included the first and second formants (see section 3.4) of five female speakers. These speakers were all judged to have a "Southern Standard British" accent (p. 48), which is synonymous with the model of the learners under investigation in our study. The native model in our study was an average of the formants of the five speakers given in Deterding. These data are generally considered a reliable benchmark for standard British English.

3.3 Speech material

In the first session of their pronunciation course, students were asked to read out a text. This was before they had had any pronunciation training. At the end of the course, they were asked to read out the same piece of text again. The text was a few pages from Evelyn Waugh's short story *Mr Loveday's Little Outing* (1936). The text, consisting of approximately 1,000 words, took the average speaker about six to seven minutes to complete. Each student's 'before' and 'after' readings were recorded.

3.4 Procedure

The vowel measurement procedure used is commonly used in the field of acoustic phonetics and sociophonetics. A vowel can be distinguished by examining the frequencies of resonance peaks, or formants, in the speech signal. Because analysis of the first and second formants (F1 and F2) are usually sufficient in determining and distinguishing one vowel from another (Deterding, 1997), we restricted our analysis to these first two formants. The F1 shows vowel openness, while F2 shows frontness (Rietveld & Van Heuven, 2001). The speech analysis computer program *Praat* (Boersma & Weenink, 2009) was used. Although *Praat* can often successfully find the proper formant values, sometimes it was necessary to make manual adjustments. A more in-depth explanation as to the pitfalls of measuring vowels and possible ways of rectifying the ambiguities can be found in Smakman (2006).

For the analysis of consonants, the researchers took a different approach. We took dictation based on what the ear heard, rather than relying on *Praat*. There were two main reasons for this. First, the acoustic properties of consonants are radically different to those of vowels, in that there is not always as much of a discernible and constant 'signal' when a consonant is said. In short, it is easier for *Praat* to miss detecting a consonantal feature. Second, unlike the case with vowels, the issue with consonants was that it was a nominal scale of measurement, meaning that in the cases of all six consonant features being measured, the question was always either the presence or the absence of that particular feature, and required only the discernment of a 'yes' or 'no' on the part of the researchers. The nearly 1,800 consonantal tokens were heard and judged by one of the researchers, the second author, as either being a successful or unsuccessful realisation of the feature in question.

The goal was to have five consonant tokens per feature, per speaker. Only on a few occasions was this not achieved, for various reason. For instance, students skipped reading a word, failed to turn the page, or produced an indistinguishable sound. The only instances in which oscillograms and/or spectrograms produced by *Praat* were used with consonants was if the presence or absence of a feature was difficult to identify based on the auditory signal. The presence or absence of voicing (of /v/ and /d/) and whether postvocalic coda /r/ was successfully deleted from speech are two notable examples.

3.4.1 Ability grouping

Upon listening to the recordings, an expert with 12 years' experience teaching similar courses (the first author of this article), assessed the entry level of each student. The assessor listened to a short fragment of each student's diagnostic test, without taking into account any specific types of pronunciation errors. Each student was given a mark on a 10-point scale, 10 being 'perfect native accent'. Three groups of students were formed in this way: advanced students (those who scored high; between 8 and 9), weaker students (those who scored low; 5.5 to 6.25) and students in between (7 to 7.25). These students will be referred to below as '+/+' (advanced), '+/–' (between advanced and weak) and '–/–' (weak).

3.5 Pronunciation issues studied

A number of vowels and consonants were selected which were generally known to be problematic for learners according to, amongst others, Gussenhoven & Broeders (1997), Van den Doel (2006), Collins et al. (2011), and Hoorn, Smakman & Foster (2014). These phonemes are listed in Table 1, which includes the symbols used to refer to the various phenomena in the Results section.

Phenomenon	Label used in the Results
/æ/	æ
/ɒ/	ɒ
/ɔː/	ɔː
/ʌ/	ʌ
/ʊ/	ʊ
syllable-final /d/	d
syllable-final /v/	v
/ð/	ð
/θ/	θ
medial /t/	t
postvocalic coda /r/	r

Table 1. Pronunciation phenomena studied.

Thus five vowels and six consonant-related phenomena were studied. Native Dutch learners of English experience a broad range of issues with these sounds. For vowels, native intuitions on Dutch vowels push or pull the English vowel in the wrong direction

and overcompensation also takes place. Devoicing and replacement with a near-equivalent in the learners' native tongue were the main issues with consonants. More details are in section 1.2.

3.6 Phoneme descriptions

The consonant phenomena were mainly transcribed auditorily, with the visual cues that spectrograms give. The second author (a native speaker of American English) did all the transcriptions, under the guidance of the first author (a native speaker of Dutch), so a semi-consensus transcription was the measurement tool. Each token was labelled as either a successful or an unsuccessful rendition of the target in question. The goal was five tokens per consonant feature per speaker, which was in almost all cases achieved. The vowels were measured acoustically, and the mean of the five tokens per vowel was calculated for all the vowels in both tests for all thirty speakers.

Vowel normalisation, a process sometimes used to minimise anatomical/ physiological variation in acoustic representations of vowels, was not applied. Such a procedure was possible but considered undesirable for several reasons. First, all of our speakers were female; Adank, Smits and van Hout (2004) used vowel normalisation through z-score analysis mainly to deal with the difference between men and women, not amongst people of the same sex. Also, Iseli, Shue and Alwan (2007) found that speakers showed a dependency on F0 for sex and on F3, not on the two formant measurements we took. In fact, for high-pitched talkers, similar to the ones used for our purposes, no significant sex dependencies were found in their investigation. Finally, the native-speaker data as provided by Deterding did not give us enough tools to normalise (no target formant Hertz values for individual tokens were available to us; Deterding only gave averagevalues in his article).

3.7 Labelling of the effect of the course

As stated, the pronunciation path for each learner's phonemes was measured separately for vowels and consonants. For consonants, the number of successful tokens was used to gauge this path. For vowels, it was determined whether the speaker's F1 and F2 moved closer to the target F1/F2, stayed at a similar distance from that target, moved away from it or – in a number of cases – approached but overshot the target. Because of the natural range of difference of F1 and F2 (F1 tends to move within a smaller Hertz range than F2), a move of 50Hz towards or away from the target was considered meaningful for F1 and a move towards or away from the target of 100Hz was considered meaningful for F2. The same was applied to the distance from the targets: within 50Hz from the F1 target and within 100Hz from the F2 target was considered meaningfully close. The four types of development, based on achievement before and after the course, and the exact criteria used to determine them, are found in Tables 2 and 3. The terms 'Pretest' and 'Posttest' refer to the results regarding the recordings before the course and after the course.

Effect label	Description of student's result
Acceptable	Result of Pretest and Posttest both close to target
Progress	Result of Posttest better than that of Pretest
Stasis	Both Pretest and Posttest deviate from target
Regress	Result of Posttest worse than that of Pretest

Table 2. Labels to express the effect of the pronunciation course.

These scores were calculated separately for vowels and consonants. Both systems are described in Table 3. For the vowels, the effect labels were established separately for F1 and F2. The letters behind the effect labels in the table are the ones used in Table 4 (Results).

Effect label	Consonants	Vowels (F1/F2)
Acceptable ('A')	At least 4 acceptable tokens in both Pretest and Posttest	No meaningful deviation (50Hz for F1, 100Hz for F2) from target in either Pretest or Posttest
Progress ('P')	Improvement by 2 tokens	Meaningful move (50Hz for F1, 100Hz for F2) towards target
Stasis ('S')	Improvement or regress by fewer than 2 tokens	Pretest and Posttest both deviate meaningfully (50Hz for F1, 100Hz for F2) from target
Regress ('R')	At least 2 acceptable tokens in Pretest and a decline in performance by at least 2 tokens in Posttest	Meaningful move (50Hz for F1, 100Hz for F2) away from target

Table 3. Criteria to determine the effect of the pronunciation course on consonants and vowels.

Some of the effects of the course fall into more than one category. To avoid this, the 'Acceptable' category was established first, and the remaining phonemes were categorised after that.

3.8 Data treatment

Running formant values through a statistical model poses several problems. Most importantly, the highest and lowest possible values per formant are not known and not measurable on the basis of our data. F1 and F2 are naturally restricted, both when it comes to their maximum and when it comes to their minimum. Unfortunately, these restrictions are different for each speaker and phoneme. Although statistical analysis is possible, it would not lead to any realistic results as the upper and lower Hertz benchmarks thus vary. Also, for the target vowels, the raw data were not available, as was indicated above. Finally, because of the nature of the data – the vowels were of an interval level of measurement while the consonants were nominal – the results for each were subjected to two different types of labelling systems. For these reasons, it was decided to base our analyses on the raw results for both phoneme classes.

4. Results

If we apply the criteria to determine the effect the pronunciation course had on the consonants and vowels of learners (Table 3), then we reach the overview as shown in Table 4. Shading is used to visualise type of result; the darker, the less successful. The table distinguishes between the F1 and F2 result for the vowels. The speakers are labelled on the basis of the assessment of their level before the course started (their Pretest recording): high (students labelled '+/+'), intermediate (students labelled '+/–') or low (students labelled '–/–'). The seven crossed-out cells represent 'not enough (consonant) tokens'.

Speaker	Vowels (F1)					Vowels (F2)					Consonants					
	æ	ɒ	ɔː	ʌ	ʊ	æ	ɒ	ɔː	ʌ	ʊ	d	v	ð	θ	t	r
+/+1	P	P	S	P	R	S	A	A	A	R	A	R	R	A	A	A
+/+2	S	R	S	P	S	S	A	A	A	S	A	P	A	A	A	A
+/+3	P	P	R	P	S	S	P	A	A	A	A	A	A	A	A	A
+/+4	P	P	S	P	S	S	S	S	P	S		S	A	A	A	A
+/+5	S	P	S	P	S	S	P	A	S	S	S	P	A	A	A	A
+/+6	S	A	S	S	S	R	A	A	A	S	A	A	A	A	A	A
+/+7	S	S	S	P	R	A	A	S	R	S	A	A	A	A	P	P
+/+8	S	S	P	S	S	A	P	P	A	S	A	P	A	A	P	A
+/+9	S	P	R	S	S	S	A	A	A	S	A	S	A	A	A	A
+/+10	R	A	P	R	R	A	A	A	A	S	A	A	A	A	A	A
+/–1	P	A	P	R	A	S	P	P	P	S	A	P	A	A	P	P
+/–2	P	P	S	P	S	P	A	S	A	A	A	A	S	R	S	P
+/–3	S	R	R	S	S	A	A	A	A	S		S	S	A	A	
+/–4	S	R	P	P	S	R	P	P	S	S	A	P	P	A	A	P
+/–5	S	R	S	P	S	S	S	S	R	R	S	A	A	A		P
+/–6	P	A	S	P	S	A	A	P	A	A	A	S	A	A	P	P
+/–7	P	S	S	S	R	A	S	A	A	R	R	A	P	A	P	P
+/–8	S	P	S	S	S	S	A	A	S	R	S	A	A	A	A	P
+/–9	P	S	P	S	S	P	S	P	R	R	S	A	S	A		P
+/–10	S	S	P	P	S	S	P	P	A	R	R	A		A		A
–/–1	P	S	P	P	S	A	R	P	A	S	A	S	S	A	S	S
–/–2	R	R	P	R	S	A	S	S	S	A	S	A	A	A	A	A
–/–3	S	R	S	S	S	A	R	A	A	P	P	P	A	A	A	A
–/–4	S	A	S	P	S	S	A	S	A	P	S	A	S	S	S	S
–/–5	S	P	S	P	R	S	P	P	S	S	A	S	A	A	P	A
–/–6	R	S	S	S	A	S	A	A	S	P	P	A	S	S	R	S
–/–7	S	S	S	S	S	A	P	S	P	P	S	P	S	A	S	P
–/–8	S	P	S	S	A	A	R	S	A	S	S	S	S	A	P	A
–/–9	P	P	S	P	A	S	S	A	P	S	P	P	R	A	A	A
–/–10	S	P	S	S	A	A	R	A	A	S	A	S	S	A	P	P

Table 4. The effects of a pronunciation course on 30 speakers' vowels (F1 and F2 separately) and consonants: Acceptable ('A'), Progress ('P'), Stasis ('S'), or Regress ('R').

Several general tendencies instantly become clear. First, the potentially best students (+/+1 until +/+10), i.e., the ones who did relatively well before the course started, show

similar numbers of Stasis as other groups for the vowels, while their consonants could be labelled as Acceptable more often than is true for the consonants of the weaker two groups of students ('–/+' and '–/–'). Second, the F2 values seem to be Acceptable across the three groups of students more than is true for the F1 of the vowels. [As a test, we did apply a more lenient cut-off deviation value for the F1 (100Hz). However, while this led to more Acceptable labels amongst the F1 tokens, it did not reveal a pattern across the three speaker groups such as is visible for the consonants.]

Table 5 shows the total number of labels for each of the three groups of speakers. It thus shows for each of the three speaker groups in what way their vowels and consonants developed. The F1 and F2 tokens have been added up.

Effect label	Vowels			Consonants		
	+/+	+/–	–/–	+/+	+/–	–/–
Acceptable	26	20	23	48	27	25
Progress	21	27	22	6	15	11
Stasis	42	39	45	3	9	22
Regress	11	14	10	2	3	2

Table 5. Total number of effect labels per speaker group.

For all three groups of speakers the vowels were subject to a Stasis effect most often, and in all three groups the consonants needed the least improvement, judging by the high number of Acceptable labels for this category of phonemes. Striking differences between groups are that the +/+ group had a high number of Acceptable consonants while the –/– group had a relatively high number of consonant tokens that were subject to Stasis. For the vowels, the numbers of tokens did not reveal any such clear outliers amongst the groups.

For a mutual comparison of the vowel and consonant findings of Table 5, the percentage of tokens relative to the total number of tokens per group of vowels and group of consonants was calculated. This is visible in Figure 1. Each value shows the percentage of vowels (F1/F2 together) and consonants of each group that is subject to one of the four labels.

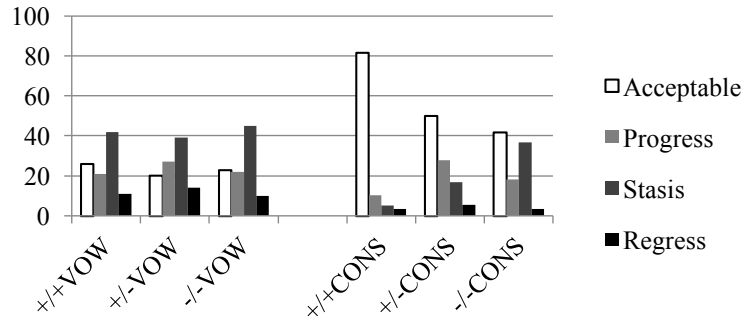

Figure 1. Percentage of vowels and consonants for each speaker group (+/+, +/–, and –/–) that was subject to one of the four labels (Acceptable, Progress, Stasis, Regress).

The difference between the vowels and consonants now becomes even more noticeable. The vowels are subject to each of the four labels to a similar degree. Clearly, there is no continuum or development for the vowels from the +/+ group to the –/– group for any of the labels. The three groups are mutually distinguishable mostly on the basis of the development of the consonants during the course. The consonants of the +/+ group are relatively often of a high level before the course starts and this high level is maintained (Acceptable). Another clear tendency is that Stasis is most dominant in the consonants of the –/– group. Surprisingly, the –/– group has a similar (low) level of Regress as the other two groups for both the vowels and the consonants.

5. Discussion

5.1 Answer to the research question

What are the patterns of acquisition of individual phonemes by students whose starting level is high, low or intermediate? It is, first of all, clear that some benefit more than others from a course such as this one. This is visible mainly in the consonant levels before the course begins; learners who are weaker at the onset ('–/–' students) show more Stasis in the improvement of consonants than do the learners who are stronger at the onset ('+/+' students).

Obviously there is a ceiling effect: if a learner has reached the target, then there is less room for improvement. This explains the similar degrees of Progress for the stronger ('+/+') learners compared with the weaker ('–/–') learners for the vowels. For the stronger learner, this denotes having reached the target. For the weaker learner, lack of ability may be the determining factor here, but the bars in Figure 1 do not show this. Ultimately, the results show that some learners have a natural knack, especially when it comes to pronouncing consonants.

5.2 Distinguishing between levels

This study has shown that some students are more naturally inclined than others and that students with considerable differences in natural ability to acquire pronunciation are sitting side by side in the same teaching context, doing the same exercises and getting the same exposure. Since the early 1970s, the idea that different students learn in different ways has shaped pedagogical practices (Pashler et al., 2008). Systematic differences amongst learners affect individuals' natural or habitual pattern of processing and acquiring language, as stated by James & Gardner (1995). Perhaps in an ideal world, students would be categorised individually and the teaching adjusted to specific types of students, whether that would be according to different learning styles (see Pashler et al., 2008), ability levels or some other relevant criteria. Advocates of the use of learning styles in teaching, for example, endorse the idea that teachers assess the styles of students and adapt the classroom settings and methods to fit each student's learning style best. This concept of individual learning, however, is often thought to be too idealised. Not many studies have confirmed the didactic validity of learning styles in education (Pashler et al., 2008) and critics even voice the opinion that evidence is lacking that

adjusting teaching style to learner styles yields any positive outcome. There is even evidence that problems of an empirical and pedagogical nature arise when tasks are adjusted to individual learners (Kolb, 1984). As a consequence, learning style as a factor behind curriculum change is not widely embraced. The reality is that types of learners are thrown together, mainly for practical, logistical and financial reasons, and are not only subjected to the same teaching styles but are also instructed on ways to learn. Teaching is then made as varied as possible, so that each learner type is accommodated to some degree. In addition, within groups, different tasks could be given to different learners, or groups could be split up heterogeneously into two or three, whereby students with a higher level may help those in need of more practice. Inevitably, such an approach will only enlarge the gap between high-level and low-level students, but it seems beneficial for all.

As a general rule, pronunciation teachers in higher education are not able to practise differentiation – for instance, ability grouping – when they teach. Such a prospect requires too much planning and too many resources. Learning pronunciation is partly an academic and partly a practical skill, and the academically smart are not necessarily the most successful at acquiring this skill. Because this discipline requires making use of a myriad of practical and academic skills in the learner, the successes achieved are likely to be dependent on didactic choices to a considerable degree, perhaps unlike some other disciplines. This means that splitting up groups on the basis of learning styles may be a particularly pertinent issue when it comes to pronunciation.

5.3 Distinguishing between learner types

So far, in this article, learner types have been qualified along the lines of level before and after the course. The concept of learner types, however, is in the literature generally associated with processing patterns, with learners being of the visual, auditory, or tactile/kinaesthetic kind and/or preferring reading/writing cues as stimuli (see Leite et al., 2009). Our assumption is that level before the course starts can be used to subdivide learners and subject these groups to different teaching styles, not just as far as level is concerned but also didactic style. So, does this mean that any pronunciation learner group should be subdivided on the basis of their visual, auditory, reader/writer, and tactile approach to learning? And how does starting level come into play? A few tentative suggestions may be made as to how this subdivision might work didactically.

A visual approach in teaching could be considered to come down to visualisations of the vocal tract and the instructor using their hands and facial expressions to demonstrate pronunciation. Auditory stimulation, then, consists of sample recordings as well as students listening to their own renditions of repeated speech. Practising through phonetic transcription might appeal most to the student who needs written stimulation and reinforcement. Tactile stimulation could consist of touching the mouth, stomach, jaw, and larynx, so as to feel one's own movements of the articulators and the rest of the body.

Our expectation is that there is a strong correlation between the susceptibility to types of teaching, the level before a pronunciation course starts and the chances of improvement during the course. We think that those students who have a strikingly high level before the course starts have, even outside the classroom, been naturally sensitive

to the acquisition of sounds surrounding them in daily life (on television, the internet, etc.) and are thus typically, or mainly, of the auditory type. When confronted with sounds, they naturally acquire the skill to imitate them, without explicit instruction. Our hypothesis is that those students who improved remarkably well during the course, without showing any particularly high level before the courses started, needed only to be switched on to learning through explicit teaching. The course activated their learning by explicitly naming/describing sounds. This means that the reading/writing-sensitive students may have been amongst this group, and the instruction text thus triggered their visual and auditory skills and possibly even made them as sensitive to the pronunciation that they are confronted with voluntarily or involuntarily every day as was the case for the auditory learners. The group that was not successful before the course started, and who showed low improvement levels, may be hypothesised to lack the sensitivity that is required to do well and are not easily switched on to learning. Tactile methods could be applied as a last resort for these learners, but such kinaesthetic teaching is highly limited in actually explaining the details of pronunciation and mainly creates sensory awareness. The best students could stimulate their own learning by instructing such low-level learners.

6. Conclusion

Of course, a person's pronunciation is more than a set of successfully or less successfully produced phonemes in isolation. It is the combination of segmental and suprasegmental speech characteristics that make authentic sounding English. And even if learners know how to apply rules, they may still sound less intelligible and natural than those who better approximate the norms. Measuring that esoteric combination of factors still seems a bridge too far with our current knowledge. Adjusting the curriculum and the language class organisation to it, and including learner types in the equation, poses even greater challenges.

References

Adank, P., Smits R., & R. van Hout. (2004). A comparison of vowel normalization procedures for language variation research. *Journal of the Acoustical Society of America*, *116*(5), 3099-3107.

Boersma, P., & Weenink, D. (2009). Praat: Doing Phonetics by Computer (Version 5.1.05). Retrieved May 1, 2015, from http://www.praat.org/.

Collins, B., den Hollander, S.P., Mees, S.P., & Rodd, J. (2011). *Sounding Better: A Practical Guide to English Pronunciation for Speakers of Dutch*. Holten: Walvaboek.

De France, T., & Smakman, D. (2013). The effects of teaching Dutch learners British English consonants. An experimental study. In D. Smakman & L. Willemsen (Eds.), *Proceedings of the Van Schools tot Scriptie Colloquium 2012*, *Leiden*, *8 & 9 June 2012*. Leiden: Leiden University Repository.

Deterding, D. (1997). The formants of monophthong vowels in Standard Southern British English pronunciation. *Journal of the International Phonetic Association*, *27*, 47-55.

Gussenhoven, C., & Broeders, A. (1997). *English Pronunciation for Student Teachers*. Groningen: Wolters-Noordhoff-Longman.

Hoorn, M., Smakman D., & Foster, A. A. (2014). Pronunciation grading practices by teachers of English. In R. van den Doel & L. Rupp (Eds.), *Pronunciation Matters. Accents of English in the Netherlands and Elsewhere*. Amsterdam: VU University Press.

Iseli, M., Shue, Y.L., & Alwan, A. (2007). Age, sex, and vowel dependencies of acoustic measures related to the voice source. *Journal of the Acoustical Society of America*, *121*(4), 2283-2295.

James, W., & Gardner, D. (1995). Learning styles: Implications for distance learning. *New Directions for Adult and Continuing Education*, *67*, 19-32.

Kolb, D. (1984). *Experiential Learning: Experience as the Source of Learning and Development*. Englewood Cliffs: Prentice-Hall.

Leite, W.L., Svinicki, M., & Shi, Y. (2009). Attempted validation of the scores of the VARK: Learning styles inventory with multitrait–multimethod confirmatory factor analysis models. *Educational and Psychological Measurement*, *70*, 323-339.

Pashler, H., McDaniel, M., Rohrer, D., & Bjork, R. (2008). Learning styles: Concepts and evidence. *Psychological Science in the Public Interest*, *9*, 105-119.

Pennington, M. C. (1989). Teaching pronunciation from the top down. *RELC Journal*, *20*(1), 21-38.

Purcell, E.T., & Suter, R. W. (1980). Predictors of pronunciation accuracy: A re-examination. *Language Learning*, *30*(2), 271-287.

Rietveld, A. C. M., & van Heuven, V. J. (2001). *Algemene Fonetiek* [General phonetics]. Bussum: Coutinho.

Smakman, D. (2006). *Standard Dutch in the Netherlands. A Sociolinguistic and Phonetic Description*. Utrecht: LOT.

Smakman, D. (2015). *Accent Building. A British English Pronunciation Course for Speakers of Dutch* (2nd ed.). Leiden: Leiden University Press.

Smakman, D., & De France, T. (2014). The acoustics of English vowels in the speech of Dutch learners before and after pronunciation training. In J. Caspers, Y.

Chen, W. Heeren, J. Pacilly, N. O. Schiller & E. van Zanten (Eds.), *Above and beyond the Segments. Experimental Linguistics and Phonetics* (288-301). Amsterdam: John Benjamins.

Van den Doel, R. (2006). *How Friendly are the Natives? An Evaluation of Native-speaker Judgments of Foreign-accented British and American English*. Utrecht: LOT.

Van der Haagen, M. (1996). *Caught between Norms. The English Pronunciation of Dutch Learners*. Utrecht: LOT.

Waugh, E. (1936). *Mr Loveday's Little Outing and Other Sad Stories*. London: Chapman & Hall.