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The Effects of Teaching Dutch Learners British English Consonants

An experimental study

Thomas de France & Dick Smakman

1. Overview

This study focuses on the field of second language pronunciation and its interaction with formal instruction. It examines the effects of pronunciation training on native Dutch learners' production of certain problematic consonants of Standard British English (SBE).

Specifically, this paper looks at a pronunciation course at the department of English Language & Culture at Leiden University in the Netherlands. The course was an intensive thirteen-week instruction through which Dutch students were expected to learn how to pronounce SBE phonemes. The course presented the articulatory features of phonemes and urged students to learn to recognise and describe these phonemes. Furthermore, the learning process was stimulated through auditory examples presented by the instructors and systematic correction of the sounds produced by students. The speech of the students was recorded at the beginning and end of this course and consonants from both recordings were transcribed for this article.

2. Research questions

1. To what degree do native Dutch learners' English consonants change following an intensive pronunciation course?
2. Are certain consonants more difficult to learn than others?
3. Can types of learners be discerned on the basis of learning patterns?

3. Purpose

The goal of this research is to present conclusions that will help English teachers in the Netherlands to be better aware of which English consonants are easily learned and which ones require more focused instruction. This paper will appeal, then, to educators who question whether the sometimes neglected aspect of pronunciation can improve through instruction or whether it is a natural ability peculiar to select speakers and is therefore to a degree beyond the learner's or instructor's control.

4. Methodology

4.1. Material

During the first and last week of the autumn 2008 semester, students enrolled in a thirteen-week (90 minutes per week) SBE pronunciation course read out a selection from Mr Loveday's Little Outing, a short story by Evelyn Waugh (from 1936). Both readings were recorded. One reading test took place before students received any pronunciation training ("Test 1"), and the other ("Test 2") took place at the end of the course. The text, consisting of 1,112 words, took each speaker about six to seven minutes to complete.

4.2. Speakers

The test subjects were 30 native speakers of Dutch. They were first-year students and most were in their late teens (18-20 years old). All speakers were female. Their regional background varied, but students in the course tend to come from the southwest area of the Netherlands. Three skill levels of students — advanced, intermediate and lower-level — were determined based on their performance at the beginning of the course. An instructor of the course listened to a short sample of each student's Test 1 performance and gave a grade based on a traditional 10-point Dutch grading scale. The judge gave the grade based purely on segmental data. On the basis of these grades, 10 advanced students (group "A"), 10 intermediate students (group "B") and 10 lower-level students (group "C") were selected.

4.3. Consonants under investigation

The pronunciation issues that were selected are difficult for Dutch learners, according to, amongst others, Gussenhoven & Broeders (1997), Van den Doel (2006), Hoorn (2009), Collins et al. (2011) and Hoorn, Smakman & Foster (submitted). The six most important consonant-related issues which these sources refer to were selected for the present research. They are described below, including an explanation of the problems at hand.

1. Syllable-final voiced alveolar plosive, /d/. In syllable-final position, Dutch underlying /d/ usually becomes voiceless, a near-phonetic neutralisation with /t/.
2. Syllable-final voiced labio-dental fricative, /v/. In syllable-final position, Dutch underlying /v/ usually becomes voiceless, a near-phonetic neutralisation with /f/.
3. Voiced dental fricative, /ð/. This sound does not occur in Dutch, and Dutch speakers are claimed to substitute this English sound with /d/, which is the closest alternative from the perspective of place of articulation coupled with voicing.
4. Voiceless dental fricative, /θ/. This sound does not occur in Dutch, and Dutch speakers are said to substitute this English sound with, most commonly, /t/.

5. Medial /t/. Some Dutch learners consistently “flap” or “tap” a medial /t/, giving it a weaker sound, closer to that of /d/. This may be due to American English influence.
6. Postvocalic /r/. Dutch learners often pronounce a highly audible postvocalic /r/ when they speak English rather than omitting this consonant, which is the norm in SBE. Maintaining this consonant in some shape or form is in line with Dutch pronunciation (Smakman 2006: 237).

4.4. The transcription

Nearly 1,800 consonantal tokens (900 before and 900 after the course) were listened to and judged by the first author, who is a native (American) English speaker living in the Netherlands. Each token was judged as either a successful or an unsuccessful realisation of the issue in question. The goal was to have five tokens per feature, per speaker. Only on a few occasions was this not possible. Oscillograms and spectrograms produced by Praat (see Boersma & Weenink 2009) were used as a secondary tool when the production of a particular consonant issue was difficult to identify based on the auditory signal alone.

5. Results

5.1. All consonants for three student groups

Results from Test 2 were compared with those from Test 1 to determine how much progress each group made in producing the six consonants. Table 1 shows a comparison of Test 1 (“T1”) and Test 2 (“T2”). The table represents all correct utterances of the nearly 1,800 tokens, which were calculated and divided by the total number to yield a “percentage correct” figure.

Table 1: Percentage correct for all tokens, over all speakers. The features referred to are the ones mentioned in 4.3.

	/d/	/v/	/ð/	/θ/	MED-/t/	DEL-/r/	total
T1	80	65	69	95	65	66	73
T2	80	68	72	95	86	89	82

Most noticeable about these results is that the voiceless dental fricative, /θ/, was, from the beginning, produced acceptably by a high number of test subjects. The two areas in which there was marked improvement was with medial /t/ and deletion of postvocalic /r/.

Table 2 shows the percentage of tokens successfully produced in each test, broken down over the three speaker groups.

Table 2: The three groups' percentage correct of the six consonantal features in Test 1 and Test 2.

	/d/		/v/		/ð/		/θ/		MED-/t/		DEL-/r/	
Grp	T1	T2	T1	T2	T1	T2	T1	T2	T1	T2	T1	T2
A	92	88	72	79	100	94	100	100	90	100	88	100
B	87	75	68	74	62	76	98	96	49	*86	50	**96
C	58	78	48	49	44	46	90	90	50	71	58	72

The overall tendency is that consonant features in most cases improve, and the intermediate group even achieved a statistically significant improvement for two consonant-related issues by the end of the course (* = $p < .05$; ** = $p < .001$). It is, on the other hand, also clear that improvement is by no means a rule, and in fact in some cases students' consonants remained more or less the same or even became more deviant from the target realisation.

5.2. Benchmarks

Tables 1 and 2 give an overview of the data and instantly reveal that the consonants of the various learner groups were affected in different ways by the course. This is true for individual learners as well. This individual and group variation will be discussed in more detail in 5.3. To interpret the data more easily, the following benchmarks are defined (bearing in mind that five tokens for each consonant per speaker were collected).

1. At least 4 acceptable tokens in both Test 1 and Test 2: Test 1 performance was already adequate 1 and remained so in Test 2. This will henceforth be referred to as "ACCEPTABLE" or "ACC".
2. The learner improved by 2 tokens: progress needed following Test 1 and was achieved with Test 2. This will be referred to as "PROGRESS" or "PRO".
3. Test 2 performance did not change in either direction by more than one token: improvement needed following Test 1 but not achieved with Test 2. This will be referred to as "STASIS" or "STA".
4. At least 2 acceptable tokens in Test 1 and a decline in performance by at least 2 tokens in Test 2: Test 1 performance was mediocre and declined in Test 2. This will be referred to as "REGRESS" or "REG".

All four scenarios occurred, but ACCEPTABLE was the most common (100 out of 180 instances). PROGRESS and STASIS happened 32 and 34 times, respectively. In 7 cases, regress occurred. Seven cases were not taken into consideration because the total number of tokens needed (5) could not be collected.

5.3. Results for individual speakers, speaker groups, and consonants

We can apply the classifications ACC, PRO, STA and REG to individual speakers. Table 3 classifies all speakers' performances of each consonant by this 4-way division. The level of the students is also in the table. The students are numbered, so, for example, "A1" is the first advanced student. The symbols are used as follows: "+" = PROGRESS; "0" = STASIS; "-" = REGRESS;

blank = ACCEPTABLE; asterisk = not enough tokens collected.

Removing the category of ACCEPTABLE from the table to show only those learners who needed the help offered by the training (as is shown by the categories PROGRESS and STASIS) or whose performance decreased (REGRESS) puts in perspective the amount of benefit that was possible for learners to receive. Of the 173 cases shown in Table 3 in which there were enough tokens collected, there are 100 blank boxes (ACCEPTABLE): that is, 100 cases in which the learner was not in need of the training in the first place. We are then left with 66 instances (32 PROGRESS and 34 STASIS) in which the learner was in need of training, or 38% (66 out of 173 cases). When the data are viewed in this way, as separate cases (of PROGRESS, REGRESS, etc.) by each speaker, we can conclude that the total benefit of the course was about 18% (32 out of 173 cases achieved PROGRESS). About one-third of these cases (namely 11) were in the production of one issue, the deletion of postvocalic /r/.

Table 3: Classification of individual speakers' performances by consonant feature.

Speaker	/d/	/v/	/ð/	/θ/	MED-/t/	DEL-/r/
A1		-	-			
A2		+				
A3						
A4	*	0				
A5	0	+				
A6						
A7					+	+
A8		+			+	
A9		0				
A10						
B1		+			+	+
B2			0	-	0	+
B3	*	0	0			*
B4		+	+			+
B5	0				*	+
B6		0			+	+
B7	-		+		+	+
B8	0					+
B9	0		0		*	+
B10	-		*		*	
C1		0	0		0	0
C2	0					
C3	+	+				
C4	0		0	0	0	0
C5		0			+	
C6	+		0	0	-	0
C7	0	+	0		0	+
C8	0	0	0		+	
C9	+	+	-			
C10		0	0		+	+

Not only can the deletion of postvocalic /r/ be claimed to be learned with ease, as it is simply the deletion of a phoneme rather than learning to produce a new phoneme, but one can also argue that mastering this consonant feature is not as important as the other issues, because postvocalic /r/ will neither lead to misunderstandings nor be considered incorrect in many

varieties (e.g., American English).

The ACCEPTABLE category seems less relevant, as it turned out the course was not needed to improve phonemes that had already been produced correctly during Test 1. Table 4 sums up Table 3 but does not include the ACCEPTABLE category.

Table 4. Revised Table 3 results, without the acceptable category.

group	/d/			/v/			/ð/			/θ/			MED-/t/			DEL-/r/		
	STA	REG		PRO	STA	REG	PRO	STA	REG	PRO	STA	REG	PRO	STA	REG	PRO	STA	REG
A	0	1	0	3	2	1	0	0	1	0	0	0	2	0	0	1	0	0
B	0	3	2	2	2	0	2	3	0	0	0	1	3	1	0	8	0	0
C	3	4	0	3	4	0	0	6	1	0	2	0	3	3	1	2	3	0
tot	3	8	2	8	8	1	2	9	2	0	2	1	8	4	1	11	3	0

PROGRESS was reached in 32 cases, STASIS in 34 cases and REGRESS in only 7 cases. The table shows that the speakers' /v/, medial /t/ and postvocalic /r/ were affected most positively by the course (PROGRESS) and that /ð/ was affected the least even though such improvement had been needed (STASIS). It also confirms that /θ/ needed the least improvement. The patterns across all speakers reveal that the following hierarchy of acquisition is very roughly true, regardless of starting proficiency: first /θ/, then medial /t/ and deletion of /r/, and finally /d/, /ð/ and /v/.

Table 5, finally, shows the results for each of the speaker groups, across all consonants.

Table 5. Success rates for the three groups.

group	PRO	STA	REG
A	6	3	2
B	15	9	3
C	11	22	2
tot	32	34	7

The advanced group ("A") was affected least by the course, which is not surprising given their initial level. The high levels of STASIS in the weakest group are striking, for they show that learners who start out weak are also very unlikely to improve. Another scenario would have been for this group to show the most improvement, simply because they had most room for improvement.

6. Conclusion

6.1. Answers to research questions

Research question 1: To what degree do native Dutch learners' English consonants change following an intensive pronunciation course?

The effects of the course were clear. In the end, several phonemes benefited from the course. In almost half the cases where progress was needed, it occurred. For certain consonants, however, pronunciation training did not seem necessary. Our results show that this is true for /θ/, although it may

also be true for consonants which were not part of our investigation but which are often taught. There were no patterns when it comes to type of phoneme and degree of success, in the sense that certain pronunciation qualities (for instance, place or manner of articulation) were easier than others.

Research question 2: Are certain consonants more difficult to learn than others?

Indeed, certain consonants seem more difficult to master than others. The voiceless dental fricative, /θ/, on one side of the spectrum, did not present even initial problems for most learners. Its voiced counterpart, /ð/, however, along with syllable-final /d/ and /v/, proved to be more challenging.

Research question 3: Can types of learners be discerned on the basis of learning patterns?

Learner types can be established on the basis of starting level: the more successful students at the start of the course have less opportunity to benefit from such a course. The results, in addition, show that qualifying students on the basis of behaviour regarding specific phonemes is not possible.

6.2. Discussion

The results show (or remind us, rather) that a pronunciation course has very unexpected results for individual learners and regarding individual consonants. In the end, fortunately, there is success, besides failure, but it is clear that there is a considerable amount of wasted energy on the part of both teachers and students. Teaching certain individuals certain consonants is to no avail or might even have negative effects in the short run. The results also show that certain problems which are put forward in the literature as being problematic do not actually seem so problematic. It may be that for certain pronunciation features, small deviations have large perceptual and evaluative effects because of stigmatisation. It is up to the learner and teacher whether they want to focus on these phonemes for this reason or not.

We have also found good evidence that it is not always useful to try to determine difficulties students may have with consonants based on a place of articulation or manner of articulation that the sounds may have in common. For example, /θ/ and /ð/ have place and manner in common: both are dental fricatives. However, the faithful production of /θ/ was considerably less challenging for learners than was that of /ð/. The data may suggest, however, that the feature of [+voice] (or [+lenis]) may be more difficult across the board, given that the three most difficult sounds in this study were all voiced: /d, v, ð/.

The consonant /θ/ is deemed by many instructors and authors to be a notorious error among Dutch native speakers, yet our speakers did not seem to have a problem with this consonant. The results, specifically those regarding /θ/, may therefore evoke the question as to whether all tokens were correctly identified. One of the authors transcribed the consonant tokens.

An argument for using transcription as a means for determining the nature of the tokens was that perceptual reality was considered more important than articulatory reality. One might wonder what to do with a realisation that strongly resembles a target without actually hitting that target perfectly, to such an extent that it is not distinguishable from the original. Is that an acceptable realisation nevertheless and should teachers make the effort to correct those inconspicuous variations? One wonders what the criteria are for certain notorious errors to be qualified as such: is it because teachers and other experts often exacerbate this issue and turn it into a realisation which is stigmatised more within the Netherlands than elsewhere? Does perception overrule articulatory reality?

Contrary to what literature in the field suggests, primarily Collins et al. (2011) and Gussenhoven & Broeders (1997), our data show that simply because a certain consonant does not exist in the source language does not necessarily mean that learners will have problems producing it in the target language. Once again, the voiceless dental fricative, /θ/, demonstrates this point. Considering the relative ease learners in this study had in producing this sound, a general statement — for example, one that would suggest that both dental fricatives are equally as difficult to learn — must not be made. A further example, that of medial /t/, also shows that L1 phonology does not necessarily transfer when learning the sound system of the target language. If learners had been using the Dutch equivalent of medial /t/, then it would have sounded similar to the British English realisation. Instead, at the beginning of the course many speakers used a flap, which is not the common Dutch realisation but one that exists in several varieties of native English, most notably General American.

The fact that only 18% of the consonants showed PROGRESS reveals that in certain instances students improve without training, while in other instances they fail to improve despite instruction. This contradictory situation is well known, and in fact studies over the decades have suggested that pronunciation may not be a teachable skill (Suter 1976; Purcell & Suter 1980; Pennington 1989; Stern 1992). These and other studies argue that factors such as biology and personality may suppress the effects of teaching and may even be the main determinants of pronunciation acquisition.

So, what happens subsequently with students like those in this study? The successes and failures of consonant acquisition reported here are not final. The students will continue their studies and their pronunciation will keep changing. They might go abroad, and that will affect their pronunciation even more. The cases of REGRESS may be the result of awareness created in the course and may lead to PROGRESS in the end. In other words, the Test 2 situation is an intermediate stage, despite the fact that the course has ended. Breaking down the old accent and building a new accent is an important rationale behind the course, and in that respect, cases of REGRESS are not necessarily viewed negatively. The assumption in this course is that with the knowledge they have, they can start self-educating and improve in that way, provided they feel the need and/or motivation to do so.

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