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Internal Processes in Acquiring an L2: Researching the phonetic and audible output of Dutch English language learners

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Preamble

There has always been an interest in people's capabilities and hidden knowledge. Many people have more abilities than they tend to be aware of, and in my view this thesis provides a bit of a window through which we can look into human abilities. Contrastively, it also shows some of the pitfalls hidden in human nature that often tend to be overlooked in language research. Sounds, symbols and human behaviour are three of my personal favourites, so the topic came quite naturally to me; the process not so much, unfortunately. Therefore, many, many thanks to all who have supported me in this venture that took longer than expected and put much on hold. Although it was not difficult for me to decide upon the topic, which was basically 'handed' to me during a teaching experience, the process of writing was arduous for me and the people who supported me. I am very grateful to my patient supervisor and to my husband who learned more than he cares about phonology, while his support remained unabated. Thanks also to my peers and my family of whom several were often dragged into the subject and helped rephrasing funny bits. Not to forget the Marinebedrijf where I was given extra time to record the participants who gave me some of their personal time to be recorded for the research. Many thanks also to these participants who were (albeit willingly) set in front of a microphone or placed behind the computer and listen to the recorded speakers in the survey.

Abstract

The processes involved in second language phonology have been long researched, yet the research is not always easy to apply in real-life teaching situations. Considering the dynamics of learning a second language and respecting the innate processes that are involved in phonology acquisition the method of this thesis steps away from a traditional lengthy formal instruction: participants were given a very short instruction on their pronunciation. The differences before and after instruction were measured both phonetically (in F1 and F2 frequencies) and audibly (survey). One participant is successful at changing his output both phonetically and audibly, while the others are less successful. Their results, however, inform us about learners' aptitude, the interconnectedness between vowel output and learner proficiency, transfer processes, and draws comparisons with dynamic systems theory and the effect that psychological tension may have on language output.

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1. Introduction

Throughout the years pronunciation teaching has been sidelined in the world of teaching. Many scholars have diagnosed this problem in their research in pronunciation education. Yet few teachers dare to enter the linguistic field of phonetics and phonology and adopt it for learning and teaching. This shows that, throughout the years, the world of research and the world of practice have remained miles apart. Yet, more research nowadays is done in classroom settings, and rather than simply observing behaviour researchers set out to measure the effects of teaching methods with phonetic measurements, questionnaires, videotaping, etc.

Underpinning this research is its geographical location: the Netherlands, a country with a specific language background. The Netherlands is said to have a 'multilingual society' (Verspoor and Cremer, 2008: 183-211). English is one of the main compulsory subjects in secondary education and therefore taught a lot. Secondary languages, apart from Dutch and English are French, German and in some cases Spanish and Chinese. In terms of pronunciation, oral exams are usually performed by the end of an educational level or second semester, but little attention is paid to teaching the students pronunciation effectively. If you ask students what the phonetic scripts next to the vocabulary lists in their English books are, some denote that it is a foreign language, and definitely not to be studied by them. To some extent this is comprehensible; the Dutch are internationally known to be good performers of English, who face little difficulty using the English language well, as their sound system is relatively close to the English sound system, partly because of our shared historical backgrounds.

Comparable to the Dutch situation, when looking at English pronunciation teaching globally there is a shared belief that pronunciation as part of second language learning is not as useful as grammar, vocabulary or communicative skills. On the one hand, educational methods involve the completing of tasks to e.g. become better at booking hotel rooms, ordering food at a restaurant or being able to work with order forms from foreign companies, or rely on communication skills in general, thus 'forgetting' to incorporate pronunciation teaching. On the other hand, there is a belief that, in order to 'create' good second language (L2) users, students need to make sense of the pronunciation. The reason for this may be either to turn students into near-native speakers, or just to make sure students will be taken seriously when speaking the L2. There is obviously some friction between the two views, but it can be argued that both views are present at the same time in the heads of many foreign language teachers. At the same time, there are diverging views about teaching different languages and their pronunciations (Derwing and Munro, 2005). Those who do regularly spend time teaching L2 pronunciation are convinced of its results, and they will convince their class of the need for pronunciation training. However, this is obviously not universal, and the ability to pass on enthusiasm for pronunciation teaching differs from person to person as much as the goals of each student differ. Still, in this research it is assumed that when there is little attention for pronunciation in general, any kind of pronunciation instruction is bound to have its effects on students' speaking skills.

From personal experience of teaching English I have come across situations where only a little nudge in the right direction can boost learner's confidence in speaking English and have rather positive results on their use of sounds and vocalisation of the (newly) acquired language. These spontaneous

classroom situations are difficult to observe and research, so for this research decisions have been made to formalise such a situation into measurable units.

1.1. Literature review and research questions

Quite a deal of research has already been executed on the effects that instruction has on the pronunciation skills (Verspoor and Cremer, 2008; De France and Smakman, 2013; Smakman and De France, 2014; Derwing and Munro, 2005; Lord, 2005) of L2 learners. The early researchers have a tendency to look at consonant production mostly, since consonants are considered to contain many of a target language's significant features. Jenkins (2002) proposes that several aspects of the English sound inventory should be addressed when teaching English pronunciation, and decides that limited attention can be given to the vowel inventory. As such, most research is and has been conducted on consonant production of L2 speakers. One might say that, currently, in pronunciation teaching research the vowel is the sidelined unit of speech. Jenkins (2002) found that for comprehension vowel quality is important for both native speaker targets and non-native speaker targets. Retaining contrast between 'live' and 'leave' remains crucial for both circumstances. However, she ascribes limited effects of changes in vowel quality as long as these changes are maintained consistently. There is one exception: according to Jenkins substitutions for the sound /ɜ:/ as in 'bird' regularly cause comprehension problems. Although Jenkins ascribes limited effects to deviant vowel qualities, there must be a line which a learner should not cross in terms of vowel quality. For example, on Dutch national television there is a television chef who is from the US and messes up his Dutch grammar, his nuclear stress, and his vowels. His consonants, however, resemble Dutch consonants. Yet, when he pronounces the Dutch word for salt (zout) he pronounces it like South (zuid) and although he is quite consistent in his mismatches, Dutch diphthongs generally have multiple minimal pairs, this makes it very difficult for the listener to be sure of his intentions. This example concerns diphthongs and not monophthongs, yet I am quite curious as to where we draw this comprehension line and how this is decided upon.

Only recently more attention has been given to vowel production in the context of teaching and learning an L2. Mostly this is done to provide an extensive reference framework on which to base new methods. For this thesis another objective is to become part of this framework for future research. I have decided to investigate whether a simple command, rather than extensive teaching over a consecutive number of days/weeks (see Smakman and DeFrance, 2014), already has its effects on the (vowel) output of Dutch L2 learners of English. In this research I intend to find measurable effects of the command. To do so, I set up a recording device for four students who provide pretest and posttest information. In order to analyse the data well, I use an phonetic measurements program that translates sounds into phonetic data and people listen to the students' output. Subsequently the data is analysed, also taking into account the participants' possible personal features. In both researching methods rather a lot of social aspects are involved that need to be discussed or ascertained.

Thus, in this thesis the assumption that any kind of pronunciation instruction will have its effects on speaking skills is placed under the microscope. The focus of this research is on the phonetic results of

the vowel output of participants, and is seconded by perceptible results evidencing or questioning the earlier phonetic results. The research questions are as follows:

- Is there a phonetically measurable change in the vowel output of the participants?
- Is there an audibly perceptible change in the participants' overall pronunciation?
- what do the results tell us about the speakers' acquired truths about English pronunciation?

The set up of this research are set out below. In chapter 2 (literary background) a detailed overview is given on previous research on the relevant topics of language acquisition, second language phonology (acquisition), early views of researchers on these topics and current research. Pronunciation learning stages are addressed as well as pronunciation teaching methods, subsequently focussing on teaching second language pronunciation. This part of the research continues by zooming in on the actual research of this thesis, considering the aims of (Dutch) teachers and students in a monolingual classroom situation, since this is the situation in which the research was executed. The chapter concludes with a literary background note on the method used for this research. Chapter 3 (methodology) proceeds with a description of the two types of qualitative analysis that were done in order to acquire the phonetic and survey analyses. In chapter 4 the results are discussed that were obtained from this data analysis, including remarkable findings. Finally, the research will be summarised with a discussion of the results, comparing these to parts of the literary framework from chapter 2.

2. Literary Background

2.1. Introduction

In the following chapter the literary framework will be set out. Firstly, the general research field is addressed. Language phonology is a definitive research field consisting of several subfields. This research is focussed on language phonology acquisition, and mostly second language phonology acquisition, of which views from the past few decades are discussed. Phonological universals in language acquisition are discussed briefly to present a background to the various approaches in phonology acquisition. In language acquisition there are several stances to take and some of them are relevant to this research. Selinker (1969, 1972) and other views on the pronunciation learning stages or periods are discussed, providing perspective to our participants' levels and aptitude in producing 'better' sounds. As well as providing relevant background to phonology acquisition the present study was based on a teaching situation. Thus (pronunciation) teaching methods are discussed as well; measuring the effects of a simplistic command may provide useful insights into current teaching practices. It will be shown that views on pronunciation teaching appear to have moved from a more determined view to a more holistic and practical view recently. We see that there are many difficulties in teaching methods, as it can be trying to identify the purpose of the teacher and student in a classroom or learning situation. Finally, in order to provide background information on the research method factors that influence pronunciation assessment are discussed and the research method, which includes the vowel as its focal point is reviewed, followed by a final review of the method of analysis.

Introduction to the research field

The movements that are made with the tongue, lips and other speech organs are called articulations (Collins and Mees, 2003). In this paper the focus will be on articulatory phonetics, which is a subfield in phonetics which studies the articulatory system. In literature a distinction is being made between phonetics and phonology. Collins and Mees (2003: 7) defined phonetics as 'the term used for the study of sound in human language', whereas phonology is described as 'the selection and pattern of sounds in a single language'. These definitions make it fairly easy to frame the field of this thesis. Although a phonetic study of the articulatory system is used to collect data, the present study involves Dutch students of English and their attempts to rearrange their sounds patterns when their attention is directed towards the sound of English. It is clear then that this research is taking place in the field of phonology, and the study is directed at students learning a second language, influencing this second language with sound patterns from their first language and creating sounds to get closer to their second language.

2.2. The acquisition of pronunciation

Second language phonology acquisition

We are, almost, all able to produce language sounds. Already from a very early age our brain and speech organs recognise sounds and produce language through speech and gestures. For several decades linguists have studied phonology acquisition, also for second language learners. The general purpose of this part of the research is to present relevant views on phonology acquisition for learners of a second language. Starting with views on language acquisition we zoom in on second language acquisition. Many scholars (e.g., Selinker, 1969, 1972; Lenneberg, 1967 on general second language acquisition; Macken and Ferguson, 2006; Trubetzkoy, 1969; Stampe, 1979 on phonological processes) have already invested in attempting to explain the mechanisms of L2 phonology acquisition. Lately, other scholars tend to take a more rigorously complex approach in terms of language acquisition. These scholars described more of the interconnectedness of variables within a language and their interdependence (Best, 1995; Flege, 1995; Larsen-Freeman, 1997; De Bot, Lowie, Verspoor, 2007; Stevens, 1972 and Johnson, 1997). These views are presented in chronological order, followed by relevant theories on second language learning stages that may affect learner's outcomes.

Early views

A common aspect of the of the output of second language learners is the fact that, very often, it sounds 'wrong' or at least deviant from both the target and the first language, while resembling both. One of the first scholars to regard second language learning in light of the first language is Selinker (1972). He observed L2 learning in its function as an Interlanguage, or a language between languages, building on earlier research to learners' errors. Interlanguage is a separate (from L1 and L2) linguistic system based on the 'observable output which results from a learner's attempted production of a target language norm' (Selinker, 1972: 35). Many L2 learners go through stages where they speak a form of language that is still quite deviant from the target language, exhibiting features of the first language, but also often has its own structural patterns, neither of the first nor of the second language. His view on second language learning was mostly focussing on free speech, as it is 'the process of attempted learning of a second language, successful or not' (Selinker, 1972: 209). The focus in this thesis will also be on internal structures and processes of the learning organism, although the research is based on non-free speech, or reading out a text, which in Selinker's opinion was too far removed from the actual production of the L2.

A scholar who was concerned with these internal structures and processes was Lenneberg (1967: 374-379, in Selinker, 1972), who defined the language structure as 'an already formulated arrangement in the brain' (Selinker, 1972: 212). Moreover, Lenneberg's structure suggested a biological

counterpart to universal grammar¹ (Chomsky, 1965), which is transformed by the infant into the *realized structure* of a particular grammar in accordance with certain maturational stages. He called this concept the *latent language structure*, a biological structure that is present in the brain and matures over time. Selinker added several footnotes to Lenneberg's structure strengthening the view that this latent language structure is not necessarily a counterpart of the universal grammar and that there is every possibility of the two concepts overlapping. The main framework is that some language acquisition processes are generally more difficult after the so-called critical period, a period somewhere from 5 years of age till the end of puberty (Lenneberg, 1967), because human biologics interfere with such processes at a later age. The research conducted here uses adult participants. It must then be clear, according to these theories, that some will be more successful than others.

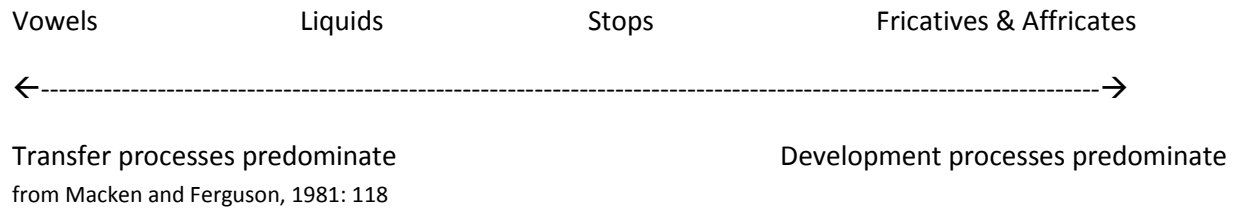
Selinker (1972) also stated that only a mere 5% of all second language learners "succeed" in learning a second language so that they achieve native-speaker 'competence'. Thus the vast majority of learners fail to achieve native-like competence. Whether this view is actually measurable remains debatable, yet it hypothesizes that an exceptional 5% have somehow 'reactivated the *latent language structure*' (p. 212), and provided arguments that counterevidence Lenneberg's proposal. But there was more to Selinker's view. He proposed the *latent psychological structure*, which can be seen as a genetically determined psychological structure which learners activate 'whenever they attempt to produce a sentence in the second-language' (p. 212). The main gain in this structure is that it suggests that psychology and language are interrelated; a useful thought to the research. Selinker (1969) also coined the term 'fossilization', which may be relevant to the output of the participants, as they all share the same first language. These are 'linguistic items, rules and subsystems' that are retained in speaker production of interlanguage and are likely to be part of the speakers' language system 'no matter the age of the learner or amount of explanation and instruction he receives in the target language' (in Selinker, 1972: 215).

Other than the grammatical and psychological structures involved in the acquisition of a language, Stampe (1969, 1979) initiated the idea that there are innate natural processes in language acquisition which may also be active in L2 acquisition. Stampe's proposal depended on the theory that 'the phonological system of a language is the residue of a universal system of processes, governed by forces implicit in human articulation and perception'. These processes are constrained 'by the mechanisms of suppression, limitation and ordering' (in Macken and Ferguson, 1981: 112), which when learning an L2 at a later stage possibly need to be overcome. Stampe, finally, provides a processing system to the language structure. The participants in this research are all adult L2 learners and are, if Stampe's proposal is correct, constrained by several limitation processes in their L2 output.

In addition, Mulford & Hecht (1980) proposed the following substitution processes in L2 acquisition. They theorized that 'substitutes predicted by both transfer and developmental processes are the ones most likely to appear and to persist' (in Macken and Ferguson, 1981: 117). The two types of processes, transfer and development, are proposed to differ 'depending on the part of phonology

¹ Chomsky (1965) described a universal grammatical system which is the same for every language learner, by which we can take on rules easily as they are already manifested in our system.

involved’.



Developmental processes can be described as the processes that evolve from the L1 development pattern. Some phonological processes are similar in both L1 and L2 acquisition. Transfer processes, on the other hand, describe the interference of the learner’s L1 structure. When researching vowel output it is to be expected, according to Mulford and Hecht (1980), that the participants will suffer mostly from transfer processes.

Later views

Other ways of looking at phonological processes were introduced in the 80s and 90s of the previous century and have gained recognition since. They are often perceived to be more holistic in their views. Factors that might aid or prevent successful L2 phonology acquisition were set out by Flege (1987) and Van Heuven (1988) and Brière (1966) among others. Flege found that it is ‘commonly accepted that L2 learners “identify” L2 phones in terms of native language (L1) categories and, as a result, use articulatory patterns established during L1 acquisition to realize those L2 phones’ (1987: 48). This view is quite in line with Mulford and Hecht’s (1980) substitution processes, discussed earlier in this chapter. Flege also stated that ‘It is [...] possible that social and/or psychological factors prevent adults from maximizing their capabilities for speech learning’ (p. 49). He then accepted that external factors are of as much influence to second language speakers’ output as internal factors.

Van Heuven (1986) and Brière (1966) had the ‘traditional view’ that ‘L2 learning is largely confined to those phones which did not occur systematically on the phonetic surface of L1’ (in Flege, 1987: 48). This seems to me a rather controversial stance, since L2 learning is not confined to acquiring new phonemes. It is also about learning these new, and already acquired phones in novel, suprasegmental and grammatical, contexts.

Best (1995) defined the Perceptual Assimilation Model on non-native speech perception. She considered that ‘non-native segments [...] tend to be perceived according to their similarities to, and discrepancies from, the native segmental constellations that are in closest proximity to them in native phonological space’ (p. 193). In other words, non-native listeners always regard unfamiliar sounds with respect to their native sounds, whether similar or not; their first reference is the native sound inventory. To me this model sounds more satisfactory, as the combination of speech sounds generally makes up the ‘new’ language. In addition, Flege (1987) theorized that ‘the phonetic space of adults is restructured during L2 learning’ thus ‘equivalence classification prevents experienced L2 learners from producing similar L2 phones, but not new L2 phones, authentically’ (p. 47). In other words, the more similar an L2

sound is to the learner's native sound inventory the less likely the L2 learner is to learn this sound authentically. On the other hand, when an L2 sound is far removed from the learner's native inventory he/she is more likely to pick up on the sound and produce it authentically, as will be discussed later in this chapter.

Finally, more controversial and natural than many of the earlier proposals, Larsen-Freeman (1997) related developmental language patterns to theories that are common in more mathematically oriented academic departments. Here the sense of 'randomness generated by complex systems,' (p. 142) or chaos, describes the limits to which anything can be known for certain. It is referred to in the literature as Chaos and Complexity theories, among which are the Dynamic Systems Theory, Complex Adaptive Systems Theory and Non-linear Systems Theory (multiple scholars incl., De Bot, Lowie, Larsen-Freeman). A Dynamic System can be seen as 'a set of variables that interact over time, and that language development can be seen as a dynamic process' (De Bot, Lowie, Verspoor, 2007:7). The reason to propose such a dynamic, non-linear way of looking at language is because language development inhibits some of the core characteristics of a dynamic system: 'sensitive dependence on initial conditions, complete interconnectedness of subsystems, the emergence of attractor states in development over time and variation both in and among individuals' (De Bot, Lowie, Verspoor, 2007:7). This latter proposition allows researchers to look at individual changes in second language acquisition of pronunciation and allow for innate patterns to exist, rather than work with a set of predefined language rules. In many ways, much of the earlier theories lead up to a Chaos system, as many of the earlier theories contain relevant thoughts of reasoning.

Theories on learning stages

Earlier, the language structures were discussed and the theory that many second language learners are less successful at acquiring a second language at a later age. A relevant hypothesis that elaborates on the stages of learning that learners experience was presented by Wieden and Nemser. For second language acquisition they noted (1991, In Cook: 2006: 71) that L2 learners go through three stages of acquiring the second language's phoneme system. They described a *presystemic* stage where they have learnt some pronunciations of words individually, and a *transferring* stage, in which the learner may recognise L1 sounds as equivalents of L2 sounds. This stage is also noted by Cook (2006: 75) who defines it as 'carrying over elements of one language one knows to another, whether L1 to L2 or L2 to L1 (reverse transfer)'. Finally Wieden and Nemser propose the *approximating* stage in which the learner approximates his original L1 sounds to different L2 sounds.

Another approach to analyse the development of an L1 user acquiring an L2 was set out by Major (2002, in Cook² 2006: 77). His ontology phylogeny model of language acquisition is based on the

² Cook seems to identify two separate aspects that are relevant in pronunciation teaching, in that the learner needs to be able to distinguish between phonemes and allophones especially when there is a distinction between the two in the native language and second language. The second aspect is concerned with the learner's ability to use the syllable structure of the second language and understand in which cases it is allowed to place epenthetic vowels in the target syllable structure. Often the native language has different rules in terms of what constitutes a syllable. Although Cook does not mention it as such, learning syllable structures is obviously also a useful tool for learning second language vowel sounds and intonation patterns.

belief that the early L2 stages of learning are largely distinguished by input from the L1. Later it depends on universal processes for every learner, until finally the L2 takes over and the learner possesses the L2 forms. This analysis may be applicable to individual features of a speaker, but seems to leave some room for debate on whether most people actually reach the final stage, because natives - but predominantly non-natives - have individual or shared sets of linguistic properties that are uncommon to the target L2. This model is quite like Nemser's, although the latter did not mention the notion of a universal grammar. These stages are greatly related to the participants in this research, because of their different language backgrounds. Each individual learner may thus be more inclined to either transfer from their L1 background to their L2 target or approximate their L2 sounds.

2.3. Pronunciation teaching

Then and now

Having discussed approaches towards the learning stages of L2 speakers, it would seem relevant to, accordingly, teach L2 learners in line with their levels of learning. However, according to Cook (2006) generally little teaching is being carried out on the sheer sounds of language. '[I]n the early days of the direct method³ [...] phonetic scripts were often used directly for language students, and they are still common at advanced levels where people are often taught 'ear-training' by transcribing spoken language' (p. 69-70). He explained that many textbooks contain phonetic scripts but only as a mediocre reference compared with other aspects of language teaching. Usually phonetic scripts can be found on the final pages of a text book close to the vocabulary lists. Derwing and Munro (2005) were explicit about the lack of focus on pronunciation teaching in L2 education: 'Teachers are left to rely on their own intuitions with little direction [...]. Many [...] are reluctant to teach pronunciation' (p. 379). Although little attention may be given to the phonetic scripts, in the classroom it can often be found in the form of a chart pinned up on the walls. The teaching that does involve the acquisition of language sounds is often focussed on minimal pairs, false friends and tongue twisters. This kind of teaching often takes place in the form of games, which can be fun ways of establishing awareness of phonemic differences within or between languages. What is more, according to Cook (2006), this area of teaching seems to be one of the few areas where teaching by simply repeating sentences is an accepted (and commonly used – Ed.) method of teaching. Since little attention is paid to teaching phonetics in language teaching and when teachers do - it is usually addressed only in advanced stages of language teaching - it seems that this language feature is reserved for only those learners who intend to master a language fully or teach others. My anticipation for this research is not that it will provide solutions to these issues, rather I anticipate more awareness of the complexity of phonology teaching and learning, thanks to – among other studies – this research. In the following two sections, current issues that prevent the use of

³ Direct method: according to Cook (2006:17) this is 'essentially any [teaching] method that relies on the second language throughout.'

effective methods in second language pronunciation teaching and research in second language pronunciation teaching are discussed.

Second language pronunciation teaching

There are multiple aspects to be aware of when teaching an L2. The transferring process from teacher to learner is one that should not be underestimated. The teacher needs to be aware of the language and learner backgrounds which are involved, and at the same time it is his/her job to set a relevant goal. It should be clear that the teacher needs to be aware of whether the first language has the same contrasting sounds as the L2 and whether sounds are allophonically similar. As discussed earlier, the hardest to master are the sounds that are not, as one might expect, the sounds that are completely different from the L1 but rather the sounds that resemble L1 sounds and have only minor variations. It is more taxing when 'two allophones of one L1 phoneme appear as two phonemes in the second language' (see 2.2 and Cook, 2006: 75), as can be seen with e.g. Japanese and their problems with non-native /r~/ sounds. It may therefore be logical to assume the same for vowel sounds. When a language has a vowel sound which resembles the English /i/, but is pronounced with a deceptively lower or higher tongue position in the L1, we can assume that this vowel sound is, in line with Cook's claim, one of the more difficult sounds to master. Thus, not only is pronunciation teaching underexposed in language teaching, it also seems to be short of a notion of the learning stages that Nemser (1971) and Mayor (2002) have ascribed to the acquisition of pronunciation. It seems to be one of the subjects in language teaching in which teaching structures remain rather static, is reserved for advanced learners and is in want of innovation.

Another reason why teachers may struggle to incorporate pronunciation teaching into their teaching habits was proposed by Jenkins (1998). Her research is largely based on earlier findings from the researchers discussed in 2.2. She decided that what prevents the progress of second language pronunciation teaching in English language teaching to operate according to a prescribed norm of pronunciation teaching is that there is a 'basic conflict between the practical need to harmonize pronunciation among L2 varieties of English sufficiently to preserve international intelligibility' (p. 120). Since English has become such a diverse language with multiple dialects and accents Jenkins also believes it important to stay close to 'the social and psychological need to respect the norms of the largest group of users of English, i.e. non-natives' (p. 120). These non-natives may have a challenging task in determining their target language.

In researching this conflict Jenkins described the necessity of non-natives learning mainly suprasegmental features, nuclear stress and using the articulatory settings appropriately. However, her initial approach is not uniform. Much of the focus seems to be on suprasegmentals. Although she did attest that attention should also be given to the articulatory settings, allowing suprasegmental aspects and segmental aspects to work together. In this research the focus will be on the segmental aspects, more specifically the vowels, and the combination of aspects (both suprasegmental and segmental aspects are going to be listened to in the survey).

On the segmental vowel quality aspects of L2 pronunciation Jenkins communicated that,

generally, non-standard but non-deviant regional norms are acceptable in line with native varieties. Particularly in interlanguage talk a lack of accurate production can have an obstructive communicative effect. Such an effect, especially of interlanguage speakers is said to be caused by the processes that are present in interlanguage speakers, who largely use 'bottom-up processing, and [...] have a narrower band of allophonic tolerance and a reduced lexical repertoire' (Jenkins, 1998: 122). Although bringing the message across may not be facilitated by mismatches in vowel quality, this effect is predominantly attested to incorrect nuclear stress-placement. However, Jenkins concedes that all the discussed areas of phonological acquisition are both teachable and learnable. Thus international intelligibility requires an appropriate usage of suprasegmental features, nuclear stress and articulatory skills. Non-standard language production, as is the case here, is required to be as accurate as regional L1 forms are allowed to deviate from the standard.

Second language pronunciation research

While there have been a fair number of researchers investigating pronunciation teaching, there appears to be a large gap in the empirical data. Derwing and Munro (2005) address issues in the introduction to their paper that other authors (Cook, 2008; Lord, 2005) recognize, such as a lack of empirical research in pronunciation education. Although classroom observation (which is carried out extensively over the world) can serve a purpose of addressing issues that may suit the lesson; it cannot serve a primary purpose, and needs to be accompanied by empirical research to improve on current methods. Subjective observations can be flawed – not just because of its subjectivity – but also because people have multiple, sometimes yet undefined, biases that obscure the perception of the researcher when a new method, technique or exercise is tested. Derwing and Munro (2005) conclude that there is considerable literature on (speech) production and perception, yet these articles hardly ever relate to second language acquisition, because this type of research is so specifically conducted that there is hardly a practical use. The lack of proper research also affects existing L2 acquisition methods so that they rely on subjective or outdated data. However, over the last three decades science has been progressing and multiple scholars have started to produce research into this field of second language acquisition. Still, a consequence of little research and limited communication between research and the teaching world is that often, as mentioned earlier, teachers often lack proper training to teach pronunciation classes, which could mean that they do not even intend to teach pronunciation. This research intends to provide additional data for further research on second language acquisition of pronunciation, aiming to bind empirical research and practical pronunciation teaching in the future.

2.4. Factors influencing speakers' output

Theories

How successful can a student be in mastering a language and its pronunciation? One thing about this is clear to all of us: some students are able to surprise you with their progress, while others do not. Having discussed ideas on teaching, the mechanisms that aid or prevent learners from effective learning, and how the scientific field regards second language phonology, it is fair to say that learners and teachers arrive in the classroom with different ideas of what the lesson will have in store for them. As well as their personal characteristics they bring numerous factors to the classroom. Their personal background, their language background, their communicational aptitude or lack of, their expectations, and quite likely: by the end of class they know whether or not class was successful today. In a class where pronunciation is taught and learned, research has shown us that teachers and learners may have completely different aims.

Piske et al (2001) listed seven significant variables that may affect learner's outcomes: age of learning, length of residence, gender, formal instruction, motivation, language learning aptitude, amount of L1 use. The factors that are likely to influence our participants' outcomes are their gender, age, level of formal instruction, motivation, aptitude and their L1 usage. The last is of great importance for this research, as all of the participants live in the Netherlands and use the target language on a very minimal basis. In terms of motivation, a not to be underestimated factor is that results may differ from predicted outcomes due to learners' hesitation to do their best in acquiring a second language. Factors that may install hesitation are a fear of looking stupid (lose face) (Meyerhoff, 2006): make mistakes, overachieve or hypercorrect, have raised expectations, making them feel too insecure about themselves or their language (possibly because of their position in society), or the people around them; or because of a lack of practice of these unfamiliar sounds. Thus, 'a wide variety of variables influence degree of foreign accent' (Piske et al, 2001: 191).

What, if so many variables influence learners' outcomes, should the speaker really aim for? The difficulty with which this question may be answered already reveals the direction language learners might be aiming for. When attempting to answer this question, it has to be noted that what is comprehensible for the local carpenter may not be comprehensible for the university teacher or vice versa. So L2 students are often asked at a very early stage to what purpose they intend to use the language. Once this question is answered it is often easier for teacher and learner to decide whether the student is capable of reaching an acceptable (in terms of the aim) level of comprehensibility. Students are often unaware of their aims. Depending on their personal social background and the goals they have in learning a second language, a combination of pronunciation features may be desirable. In literature the debate is still going on (Jenkins, 2002; Derwing and Munro, 2005; Gussenhoven et al, 1997; Van den Doel and Rupp, 2014 and others). Wondering whether pronunciation is actually teachable, scholars are researching, through various experiments, the nature of second language pronunciation and how it is learned.

Nowadays the focus among researchers is on the ability to get the message across without much difficulty. Derwing and Munro (2005) called it 'mutual intelligibility', based on the differences that already exist between American, British and Australian English. Students were not taught to speak like a native, but just to be understood by different L1 speakers from different varieties of English. Jenkins (2002) agrees with them using similar definitions: intelligibility and regional appropriateness. Jenkins proposes an international approach to pronunciation teaching, designing the teaching around

appropriate aims that suits learners' needs. Thus this diversity in needs and expectations is an engaging and challenging factor in second language learning and teaching and they differ per student, per class and per region.

Focussing now on this research and the participants' English, and acknowledging that it is no longer straightforward for teachers to teach a version of Received Pronunciation or General American. In accordance with the internationalisation of the ELT realm, in the second recording the participants will be asked to speak a more English version of what they did in the first recording. It is completely up to them to decide what this might entail, hopefully demonstrating what they consider to be closer to a useful kind of English. As they are asked to do so they may be able to produce their ideal accent to the extent of what they are capable of in their level of English. Jenkins (2002) already found that 'NNSs (non-native speakers, ed.) engaged in ILT [...] work out for themselves which features of their pronunciation are potentially unintelligible for their NNS interlocutors, and endeavour to replace them' (p. 91). The idea that non-native speakers can work out for themselves which features are either intelligible or unintelligible could relate to learners' intrinsic knowledge of comprehensibility. Naturally, non-native speakers need an environment that nurtures their potential in acquiring a second language. The following aspect should therefore not be overlooked, as it shows some threats to their success in acquiring the L2, as well as provide a background to their level of success.

The fact that these students are exposed to a single non-native variety and have no immediate need to communicate using English daily makes it exceedingly difficult for these learners to take their pronunciation to the next level. Moreover, Jenkins (1998) stated that in the case of adolescent learners, sometimes it 'engender[s] a degree of embarrassment about approximating closely to the L2 model in front of the peer group' (Jenkins, 1998: 126). Furthermore, Jenkins' 2002 research shows that speakers in a monolingual learning situation are less likely to accommodate to a more English version of their accent, as long as their peers understand them perfectly well. Bygate (1988: 76-7) agrees with Jenkins to the extent that group work in a same-L1 environment 'at least allows and at worst encourages fossilization and the use of deviant L2 forms'. Jenkins (2002) later describes two situations where in the first situation a Swiss-German talks to a Japanese learner and in the second situation the Swiss-German speaks to another Swiss-German. The latter combination demonstrated more accommodation to the German sounds and in the first situation the Swiss-German is seen to accommodate to a more general English phonology so as to be comprehensible for the other L1 speaker, the Japanese. Thus I expect to find little difference in the output of the participants in their second recordings, particularly because their background situation has not been very nurturing.

The research participants' pronunciation aim

Keeping in mind their background situations, for this research we still require a standard to compare the participants' results to. Without defining students' aims it will prove very difficult to show whether a speaker is more successful in his second recording or not. Should we assume the participants aimed for General American or Received Pronunciation? Or should their aim be seen to be directed at Estuary English? I assume that these students hardly, if ever, watch BBC or CNN television and will, in the past,

most likely have come across American sitcoms and reality shows on commercial television and British detectives on public television. In addition to this they have learned the language from their former and current teachers. Their current teacher (the author) speaks an accent that is closer to RP or Estuary English than to GA. They have different educational backgrounds, in terms of their education levels and where they were educated. Any English teacher may have been involved in their early acquisition of the language, just as any television/radio program or other type of medium may have been involved. The students were, like most students, not instructed for the past year or so on what their target language should sound like; general comprehensibility and manageable production of the L2 was considered paramount. Because of this a standard on male pronunciation output was chosen that was designed by Wells (1980s), which will be discussed in the following chapter, preceded by a background view on the general research method.

2.5. Literary background on the research method

Two particular factors of the research method need to be addressed here: the focus on vowels, and the phonetic analysis that was used to obtain data, and a note on the data that is gathered from the listeners. Quite some research has already been done on how to approach these topics in the methodology. As such the methodological decisions made in this research are justified below.

In researching vowels scholars have attempted more than one strategy to identify them. In the early days scholars (e.g. Melville Bell, 1867) recorded sounds and listened intently to define the right phoneme, but nowadays more modern equipment is used to determine sound structures. It has even been attempted to single out vowels and consonants in isolation. According to Strange et al (1976) it is possible to produce vowels in isolation. Yet, in an environment of stop consonants in initial and final position of the syllable listeners identify vowels more accurately than in isolation. Strange hypothesized that vowel identification is characterized by more than 'static points in a space defined by the first two formants'. Rather, Strange argues it 'is carried in the dynamic configuration of the whole syllable' (213-214). In its dynamic configuration, rather than in isolation, the participants' sounds in this research will be judged on vowel quality and more suprasegmental features.

In terms of vowel output there are significant factors that may need addressing in the results section. Since 'cross-language tests of vowels allow measures of vowels in similar regions of the vowel space with significant differences in the native language phonologies' (Mitsuya et al, 2011:2979). thus noting that the exact vowel space can differ according to speaker and language environment. Therefore, the exact location of formant production may vary from speaker to speaker (see also Ferragne and Pellegrino, 2010). Manuel (1990, in Mitsuya et al, 2011: 2979) extends this notion with the suggestion that 'requirements for the precision of articulation may vary between languages with closely versus sparsely distributed vowel inventories [...] Thus, the requirements for successful control of formant production may vary across language.' Moreover, male and female speakers have different formant values, and there is a difference between spontaneous connected speech and individual words (Deterding, 1997). In other words, some languages require a specific formant location for certain vowels

whereas other languages may have a more dispersed vowel inventory; depending on age, gender and region.

Although speakers are bound to produce output that is limited to inhibitive factors, researchers decide time and time again on the target that speakers should or should not aim for. De France and Smakman (2013) and Smakman and De France (2014) presented several studies among which one paper involved Dutch learners of English who were recorded before and after a comprehensive course designed to improve their pronunciation skills. Their research forms the primary reference for the study that I do, and their pretest/posttest system (Smakman and De France, 2014) was an inspiration for this study. In their studies they describe several English vowels which pose a threat for Dutch learners as a result of their proximity to Dutch vowel sounds: /æ, ɒ, ɔ:, ʌ, ʊ/. They often pronounce /æ/ too close, approximating Dutch native /ɛ/. According to Smakman and De France (2014) minimal pairs like 'bat' and 'bet' are thus 'neutralised'. They continue that 'the phoneme /ɒ/ (as in 'lot') is often substituted by Dutch /ɔ/ which, according to Gussenhoven and Broeders (1997: 99), is too close'. Dutch learners tend to scramble up General American vowels with Dutch vowels when attempting Received Pronunciation sounds. The STRUT vowel /ʌ/ is very difficult for Dutch speakers as it is a completely unfamiliar sound. It is often pronounced as /u/ or /ɔ/ (Collins et al, 2011: 60-61). Finally Smakman and De France note that /ʊ/ as in LOOK 'is often replaced by a sound similar to /u/ by Dutch learners, as in Dutch 'voet''. Some of these vowels are revisited in the discussion later.

The phonetic analysis brings about a number of aspects that require some attention. First of all, we have to determine the analysed speech units and their difficulties. Speech sounds can be discriminated from three different angles: pitch, loudness and quality. Pitch refers to what can be seen as a note on a musical scale, loudness can be regarded as the volume with which one speaks and quality is e.g. what separates the words 'book' /ʊ/ from 'back' /æ/ in pronunciation. In the case of voiced sounds (not all sounds are voiced) 'vibrating vocal folds chop up the stream of lung air so that pulses of relatively high pressure in the form of sound waves move through the air somewhat like ripples on a pond' (Ladefoged and Johnson, 2011: 7). Ladefoged and Johnson decide that the way sound waves are represented digitally, in the spectrogram for instance, is very similar to the representation of the movements of eardrums. These sound waves are represented by different formants. Usually vowels have up to four or six formants; the first four are used for analysis most often. The first formant (F1) has a lower frequency for a close vowel and a higher frequency for an open vowel. The second formant (F2) has a lower frequency for a back vowel and a higher frequency for a front vowel (Ladefoged, 2006). Vowel frequencies or formants are defined by Gunnar Fant (1960) as 'the spectral peaks of the sound spectrum of the voice' (p. 20). It is also a term used to describe an acoustic resonance of the human vocal tract (Titze, 1994). One aspect of representing vowels with these formant frequencies has to be noted though, it does not include any information on features such as rounding or spreading one's lips to acquire some types of distinctive sounds, e.g. as for the rounded vowel in the word 'George'. It measures tongue movement mainly.

Eventually, having decided that F1 and F2 frequencies are the vowel frequencies to be analysed, there is one more issue to address here. Even when speakers may produce 'flawless' vowels, in connected speech, as in reading out single words, there is one sound that often ruins the data. As Jespersen (1964) already noted: R is a difficult sound for many people. To explain its difficulty McGovern

and Strange (1977: 1) observe that ‘acoustically, liquids share properties with both stops and vowels; they have a relatively steady-state portion that is vowel-like as well as the amplitude and frequency transitions characteristics of stop consonants’. This sound causes an obstruction in the articulatory settings, but still allows air and sound to come through. When listening to a word, for instance the word ‘very’, it is problematic to determine where the vowel /e/ ends and the sonorant /r/ begins. This environment can be quite harmful for the quality of the vowel as it can be difficult to determine where the vowel sound ends and the sonorant approximant /r/ begins. However, as this research does not include native speakers of English, I am cautious about in- or excluding vowels and consonants, because the pronunciation patterns can be so distinct from native sounds that some sounds may be easier to include than we might expect.

Finally, a note needs to be added on the judgement of the listeners that will take part in this research. From personal experience I have come to realize that non-natives who share the language background of the speakers, Dutch learners in particular, can be very critical about speakers’ pronunciation, whereas native speakers or English language learners from other language backgrounds probably listen to the Dutch L2 learner of English without much preconception from their native language background and tend to judge those learners slightly differently. Van den Doel (2006: 4) noted that ‘non-native accents are, generally speaking, subject to negative evaluations by native speakers’. Therefore it is also interesting to find whether non-native speakers are more critical in this survey than native speakers.

Every mentioned theory is related to the research in this thesis, and in order to research language empirically a methodology is required which will be presented in the following chapter.

3. Methodology

3.1. Introduction

The participants in this research have been asked to read out part of a story. The story is designed so that it contains many different vowels and consonant structures, all of which are typical of the English language. However, even for native English speakers this text can be rather a tongue twister. The main reason for choosing this method is based on a belief that when students are reading out a narrative or text their attention will already be directed more towards pronunciation rather than when they speak the language among friends. In the latter context speakers may be more focussed on content than on pronunciation. Their results were analysed by measuring the phonetics of their vowels using a program that was developed to translate acoustic measurements into F1 and F2 frequencies (and more, but for this study results are limited to these two frequencies). As vowel measurements give only some indication of possible progress, it was deemed necessary to add a second measuring method. Successful production of sounds can be measured phonetically, but in language it is also paramount that individual listeners can understand the speaker. Thus a questionnaire was developed to measure the speakers' perceptible achievements, as judged by oblivious listeners. In this chapter the procedure is discussed.

3.2. Method of recording and analysing sounds

Recording the data

A recording device was set up in a separate room near the classroom, where little background noise would be able to interfere with the recordings. The recording device was a Zoom H1 Handy recorder placed on a tripod on the table. It was positioned in such a way that the student would sit right in front of it, when reading the text. Phonetic analysis was done using Praat version 5.3.57 (Boersma, Weenink, 2013). It was necessary to supervise the recording, in order to ascertain that the device would be turned on and off at the right time and to make sure that the students would know exactly what was coming. A planning was made that allowed the students approximately five minutes to settle comfortably and receive the instructions. The students were individually informed on how the recording was set up; as the recording started they would need to pronounce their number and their name, followed by a text (discussed below) they were to read (pretest). Then a short instruction was given on how to approach the text for the second recording (posttest). They were requested to talk more English-like in the second attempt and it was up to them to decide what it would sound like. They were given a loose framework suggesting that their attempt could be more exaggerated or move towards a current standard, whatever they thought would sound more English-like. These instructions were presented to them in Dutch – their native language – so that it would not interfere with their current standard of English. When preparing for the recording sessions they had some time to read the text, in order for them to feel comfortable with the words.

The reading text

The (part of the) text used in this research is called *Comma Gets a Cure* (Honorof et al., 2000). This piece of text was developed by Jill McCullough and Barbara Somerville. It was realized to allow researchers to ‘examine a reader’s pronunciation across a wide variety of phonemic contexts’. I decided to use the first three paragraphs, presented below. Following, there is an IPA (International Phonetic Alphabet) transcript, that aims for standard British English:

Well, here’s a story for you:

Sarah Perry was a veterinary nurse who had been working daily at an old zoo in a deserted district of the territory, so she was very happy to start a new job at a superb private practice in North Square near the Duke Street Tower. That area was much nearer for her and more to her liking. Even so, on her first morning, she felt stressed. She ate a bowl of porridge, checked herself in the mirror and washed her face in a hurry. Then she put on a plain yellow dress and a fleece jacket, picked up her kit and headed for work.

When she got there, there was a woman with a goose waiting for her. The woman gave Sarah an official letter from the vet. The letter implied that the animal could be suffering from a rare form of foot and mouth disease, which was surprising, because normally you would only expect to see it in a dog or a goat. Sarah was sentimental, so this made her feel sorry for the beautiful bird.

Before long, that itchy goose began to strut around the office like a lunatic, which made an unsanitary mess. The goose’s owner, Mary Harrison, kept calling, “Comma, Comma,” which Sarah thought was an odd choice for a name, Comma was strong and huge, so it would take some force to trap her, but Sarah had a different idea. First she tried gently stroking the goose’s lower back with her palm, then singing a tune to her. Finally, she administered ether. Her efforts were not futile. In no time, the goose began to tire, so Sarah was able to hold onto Comma and give her a relaxing bath.

/wel hɪəz ə stɔːri fə juː/

/seərə pəri wɒz ə vetərɪnəri nɜːs hʊː d bɪn wɜːkɪŋ deɪli æt ən əld zuː ɪn ə dɪzɜːtɪd dɪstrɪkt əv ðə terrɪtəri/
/səʊ ʃiː wəz veri hæpi tə stɑːt ə njuː dʒɒb æt ə sʊpɜːb praɪvət prækʃɪs ɪn nɔːθ skweə nɪə ðə dʒuːk striːt taʊə/
/ðæt eəriə wəz mʌtʃ nɪərə fɔːr hɜː ənd mɔː tuː hɜː laɪkɪŋ/
/iːvən səʊ ɒn hɜː fɜːst mɔːnɪŋ ʃiː felt strest/
/ʃiː eɪt ə bəʊl əv pɒrɪdʒ tʃɛkt hɜːself ɪn ðə mɪrər en wɒʃt hɜː feɪs ɪn ə hʌri/
/ðen ʃiː pʌt ɒn ə pleɪn jeləʊ dres ənd ə flɪːs dʒækɪt pɪkt ʌp hɜː kɪt ə hedɪd fə wɜːk/

/[h]wen ʃiː ɡɒt ðeː ðeː wɒz ə wuːmən wɪð ə guːs weɪtɪŋ fɔːr hɜː/

/ðə wuːmən geɪv seərə ən vɪʃjəl letə frəm ðə vet/

/ðə letə ɪmplaɪd ðæt ðiː ænɪməl kuːd biː sʌfəriŋ frəm ə reər fɔːm əv fʊt ən maʊθ dɪziːz [h]wɪtʃ wəz sɜːpraɪzɪŋ
bɪkɒz nɔːməli juː wuːd əʊnli ɪkspekt tə siː ɪt ɪn ə dɒg əv ə ɡəʊt/

/seərə wəz sentɪmentəl səʊ ðɪs meɪd hɜː fiːf sɒri fə ðə bjuːtɪfəl bɜːd/

/bɪfɔː lɒŋ ðæt ɪtʃiː guːs bɪɡən tə strʌt əraʊnd ðiː vɪs laɪk ə lʊnətɪk [h]wɪtʃ meɪd ən ʌnsænɪtəri mes/

/ðə guːsɪz əʊnə meəri hærisən kept ɔːlɪŋ , kɒmə kɒmə , [h]wɪtʃ seərə θɔːt wəz ən vɒd tʃɔːs fər ə neɪm/

/kɒmə wəz strɒŋ ən hjuːdʒ səʊ ɪt əd taɪk sʌm fɔːs tə træp hɜː bʌt seərə həd ə dɪfrənt aɪdiə/

/fɜːst ʃiː traɪd dʒentli strəʊkɪŋ ðə guːsɪz læʊə bæk wɪð hɜː pɑːm ðen sɪŋɪŋ ə tjuːn tuː hɜː/

/fainəli ʃiː ədɪmɪnɪstəd iːθə/

/hɜːr efɜːts wɜː nɒt fjuːtaɪl/

/ɪn nəʊ taɪm ðə guːs bɪɡən tə taɪə səʊ seərə wəz eɪbəl tə həʊld ɒntʊ kɒmə ənd ɡɪv hɜːr ə rɪlæksɪŋ bɑːθ/

This text was designed to capture the English accent of speakers so it seemed like a useful text for this research. It contains numerous typical elements which native speakers of English tend to pronounce in their own way and has quite advanced English words in it. Table 3 shows the list of words used to analyse the speakers’ vowel sounds.

3.3. Students' backgrounds

General background and motivation of the students

Four male students were selected to participate in this qualitative research. Their ages ranged from 24 to 46. Before they started their English training all of them had had English training the year before or some years before that. Three of the participants attended a so-called beginners class at A2 level⁴, the other one attended English classes at B2 level (see Table below). In terms of education, one participant only finished secondary school, two participants had finished vocational studies and one participant had finished his bachelor's degree. Three students are employees of this government ruled firm, offering supportive services to the Dutch Navy, comparable to Babcock in the UK. One of the students actually works for the Dutch Royal Navy (JW). They attended English classes because English is required in their line of work, e.g. in making phone calls for shipping abroad and/or ordering goods from abroad. Some of them also need it for communication with foreign visitors and others wish to upgrade their English because it will improve their resume. Some of the students were sent to English class by their managers and others volunteered to take English classes. In essence, these students are highly motivated and need good English skills for their careers.

Table 1 Phonetic analysis: participants' general backgrounds

	Age	Gender	Last time learning English	Prev. Education (Dutch system)	Est. level of English	Native Language
WM	24	m	Before 2013	Mbo-4	A2	Dutch
W	46	m	2013	MTS	A2	Dutch
M	30	m	Before 2013	vbo	A2	Dutch
JW	28	m	2013	Bsc	B2(C1)	Dutch

Speakers' English language background

They were students of English at a technical company and were taught English at different levels ranging from A2 to B2. These classes were taught once a week and lasted an hour and a half. During these classes the students used the teaching method 20/20 English⁵, a method designed for people studying for a technical profession or have technical backgrounds. This method may be considered to be a Communicative Language Teaching approach, as its main exercises are aimed at communication through interaction, i.e., writing letters to technical firms and discussing safety regulations with classmates. On top of that the method provided exercises involving the students to use their personal experiences in

⁴ This level was established by the European Council according to the Common European Reference Framework (CERF).

⁵ Various authors: see bibliography.

doing a Case (a summarising activity at the end of a unit) or other exercises. Furthermore, they used a self-study grammar book and discussed technical topics using online newspapers and television programs. Unlike most students, they have worked analytically with vowels before as they had to do a weekly exercise looking for ten rhyming words a week, a couple of vowels of the English pronunciation system a week.

3.4. Phonetic Analysis

Analysing the results with PRAAT

Phonetic analysis was done using Praat, which provides a phonetic description of speech sounds and can be helpful in identifying important aspects of vowel quality and length. It delivers a visual image of speech sounds as well as a calculation of formant frequencies, which helps to identify vowel place and sound. It uses a spectrogram, or spectro analyzer, to represent the amplitude peak of the sound which enables the researcher to locate vowels, consonants, pauses in speech and other features in (connected) speech. The quality of the vowels is analysed in terms of its frequencies. For these frequencies, there are four to six formant frequencies which the program is able to register. The first two formants (F1 and F2) are enough to distinguish between vowels. So for this research only the first and second formant frequencies have been scrutinized. In order to analyse changes in the data the cutoff model by Smakman and DeFrance (2014), developed to define relevant levels of change (see the results section) was used.

In this research averages of vowel formant frequencies as collected by Wells (1960s) for male English speakers have been used as a comparable reference. As the participants were all male speakers and literature does not seem to discuss large changes in vowel pronunciation (as opposed to grammatical changes: Leech and Smith, 2006) since the 60s of the previous century Wells frequencies are considered to be a useful reference here. It demonstrates the phonetic space in which English vowels and their first and second formant frequencies are situated.

Table 2 male vowel formant frequencies as collected by J.C. Wells (1960s)⁶

Vowel	F1(Hz)	F2(Hz)
i:	280	2620
ɪ	360	2220
e	600	2060
æ	800	1760
ʌ	760	1320
ɑ:	740	1180
ɒ	560	920
ɔ:	480	760
ʊ	380	940
u:	320	920
ɜ:	560	1480

For the research particular phonemes were elicited from a text which all participants read out. A total of 170 (see Table 3) vowel samples were chosen based on the results of their waveforms and spectral analysis. To be sure about the speakers' intended vowel quality the entire text was first transcribed into phonetic symbols (see the Text further below) by the author. In assigning the correct phonetic symbol to a lexical item the Longman Pronunciation Dictionary (Wells, 2000) was used as a reference. Subsequently, lists were made to identify the individual phonemes according to their appearance in the text, increasing readability for the author who would be listening to the recordings. By playing the audio files it was then possible to select the right vowels. Attention was paid to choosing clean samples of sound. A selection was made to exclude bad recordings, e.g. when persons would cough or other external sounds interfered with sound quality. Those sounds that were preceded or followed by vowel-like consonants were excluded from further analysis as well, because they could reduce vowel quality in some cases. For example, in the word 'feel', the long open front vowel /i:/ is followed by a lateral fricative /ɸ/, in which the vowel is gradually raised to the fricative, therefore allowing little time to bring out the actual long vowel sound in the analysis program. In other cases, e.g. for the vowel in 'heat' the distinction between vowel and consonant (coda) is completely evident, allowing the vowel to be used for analysis. However, in determining vowel quality sometimes the quality remained intact despite obvious disadvantageous environments. In these cases the vowels were added to the pile of data and only removed when proved to adversely affect the rest of the data.

Table 3 list of vowels, including the number of found tokens in the text and environments they were found in

	No. Of tokens	
/æ/	14	At, happy, practice, that, jacket, animal, that, began, unsanitary, Harisson, trap, back, began, relaxing
/ɑ:/	3	Start, palm, bath
/aɪ/	11	Private, liking, implied, surprising, like, idea, tried, finally, futile, time, tire

⁶ /æ/ as in TRAP, /ɑ:/ as in (RP) BATH, /e/ as in DRESS, /ɪ/ as in KIT, /i:/ as in FLEECE, /ʊ/ as in LOOK, /u:/ as in GOOSE, /ʌ/ as in STRUT, /ɒ/ as in LOT, /ɔ:/ as in GEORGE, /ɜ:/ as in NURSE, following Wells (1982) lexical set words.

/e/	19	Well, Perry, veterinary, territory, very, felt, stressed, checked, herself, then, dress, headed, when, letter, vet, letter, sentimental, mess, kept, gently, then, efforts
/ɜ:/	12	Nurse, working, deserted, superb, first, herself, work, surprising, bird, first, efforts, were,
/eə/	10	Sarah, square, area, Sarah, rare, Sarah, Mary, Sarah, Sarah, Sarah
/ɜ/	11	Her, her, her, her, her, her, her, her, her, her, her, her
/eɪ/	8	Daily, ate, face, plain, waiting, gave, made, made, name,
/əʊ/	13	Old, so, so, bowl, yellow, only, goat, so, owner, so, stroking, lower, no, so, hold
/ɪə/	4	Here, near, nearer, idea,
/ɒ/	24	Was, job, on, porridge, washed, on, got, was, for, official, because, dog, sorry, long, office, calling, comma, comma, odd, comma, strong, not, onto, comma
/ɔ:/	9	Story, North, more, form, before, thought, force,
/ʊ/	8	Superb, put, woman, woman, foot, lunatic, to, onto
/u:/	16	Who, zoo, new, Duke, goose, could, you, would, beautiful, goose, goose's, huge, goose's, tune, futile, goose
/ʌ/	8	Much, hurry, up, suffering, strut, unsanitary, some, but,

Gradually the vowels were further scrutinized in terms of context and quality, which led to the exclusion of the BATH vowel. In the text limited tokens of this vowel occurred and because the vowel is often followed by /r/ in spelling which would, in RP, result in a lengthening of the preceding vowel and would, in GA (General American), result in a change of vowel quality and pronunciation of /r/ in some way or other. Therefore, in order to investigate this sound in Praat, it would be necessary to obtain more tokens than the ones we have now, in order to find out which quality of vowel the speakers were aiming for. The vowels of GEORGE and NURSE were investigated because they are typical English vowels, contrasting with the participants' familiar Dutch and could be useful in adding more detail to the research. Possibly these vowels provide answers to whether and how participants tend towards more English-like pronunciation. The results of these vowels will be shown, but will receive little attention in the discussion as their quality is often coated with the subsequent /r/ that is present in the spelling of almost every token in the text.

For the TRAP vowel eleven tokens were elicited from the text, for DRESS fourteen tokens, for KIT nine tokens, for FLEECE seven tokens, for LOOK four tokens (of which 2 were later discarded), for GOOSE ten tokens (although one of the speakers, who had never seen the word *goose* before mispronounced it three out of four times probably due to his unfamiliarity with the word so far), for STRUT seven tokens, for LOT eleven tokens and for GEORGE nine and for NURSE ten tokens (see Table 3). For the latter two all tokens but one were set in an environment followed by /r/ and another consonant.

Analysing perceptive sounds

The research also required information on people's perception to measure the participants' progress. If this research were only to measure vowels it could not claim anything in terms of speakers' progress,

since vowel sounds are only one aspect of the pronunciation domain. Features such as articulation, intonation, stress, speed, repetitions/corrections and pauses are all important in defining or ascertaining a person's fluency. By conducting a survey having participants listen to parts of the speakers' output I anticipate to present 'perception' data about the test group. In order to compare the vowel output to something other than a relatively objective measuring program (Praat) this survey will provide us with data from listeners who all judge the L2 learners' pronunciation according to their own perception. This may add to answering the questions: does what the participants do to their pronunciation equally install itself on the listeners? And do the speakers progress to a more English-like pronunciation, both phonetically and audibly?

3.5. Application of the method

Using an online survey tool I was able to digitalize excerpts of the participants' speech and put these online. I chose more or less the same part of the Comma Gets a Cure (Honorof et al, 2000) text. Corrections and hitches tend to disadvantage the speaker in terms of fluency perception. The excerpts were chosen while bearing in mind to reduce the number of corrections and hitches in their speech and providing the listeners with the same text for every participant. The definitive excerpt was chosen for its relatively early appearance in the text, it is the second sentence, and its limited number of corrections for all participants. Because the later parts of the text are chronologically farther removed from the command to speak more English-like I decided to have the listeners hear a piece of text where the command would still be present in the speakers' minds and thus more plausible to affect the results of the posttest. The piece of text the survey-group listened to is shown below:

Sarah Perry was a veterinary nurse who had been working daily at an old zoo in a deserted district of the territory, so she was very happy to start a new job at a superb private practice in North Square near the Duke Street Tower.

These participants answered five questions about their backgrounds in terms of personal background, educational level, whether they were native speakers of English, the frequency with which they generally conversed with non-native speakers of English and whether they had ever participated in a similar questionnaire (see Appendix III). Finally they were asked to judge each speaker's read out pretest and posttest in terms of sounding native (scale 1-5) and describe which feature of speech influenced their judgement. The four speakers and their pre- and posttests were presented to them in a random order.

The survey was posted online on a social media platform and shared by some people into their personal networks.

4. Results

The following chapter provides an overview of the results of this study. Here I will discuss the participants' individual results in the vowel study, their interpretations of the activity and difficulties that were encountered during the process of recording and studying the materials. Next, the results of the questionnaire are presented, providing discussion points for the next chapter.

4.1. Vowel Study Results

As mentioned earlier - in the methodology - the participants had a difficult time pronouncing the words in the Comma Gets a Cure text (Honorof et al, 2000). In search of a text that contains useful features of the target language it is a challenging thing to find one that can still ease the speakers into feeling comfortable pronouncing all the words more or less naturally. Other researchers are therefore advised to do a pilot study with participants reading the story in advance, to be more aware of evidential difficulties in the text. Some words, which are part of the native speaker's early acquired vocabulary, (e.g. 'goose') were found to be beyond the Dutch speakers' L2 vocabulary. Nevertheless, sufficient data has been retrieved from the audio fragments, but it should be taken into account that some of the data were influenced by this phenomenon.

Noteworthy are the speakers' levels of English. In this study there were four participants, who for privacy reasons will be called WM, M, W and JW. The first three participants: WM, M and W attended English classes at a pre-intermediate level (A2). The latter, JW, attended those classes at a higher level, called advanced (B2). It would therefore be reasonable to expect that the biggest difference in progress, whether in terms of direction or distance, can be expected between these two levels. Yet the small number of participants may prove to counteract with such expectations, because such changes are tested more effectively among large groups of people. Therefore the results will be regarded in view of individual progress predominantly, rather than giving a comparative analysis between participants.

Compared to Wells' (1960s) standard for male English speakers the results of the participants' mean averages demonstrate a shift in various directions for all the vowels. For legibility reasons the data from the appendices are shown in the following sections. They have singular improvements and declines which are difficult to compare individually. In the following sections the participants will be discussed in turn as their progress seems very random when compared to each other but may display singular logical features. In calculating the vowel movements it is important to be aware of the fact that when both F1 and F2 frequencies moved towards the standard they were considered to be successful. When either of them or both moved towards the opposite direction they were considered to be unsuccessful.

Phonetic results of participant WM's pretest and posttest

Tables 4 and 5 demonstrate the vowel sounds in mean averages, both the sounds determined by Wells

(1960s) and those produced by participant WM in the pre- and posttest recordings. They show both F1 and F2 mean averages of the sounds of TRAP, DRESS, NURSE, GEORGE, LOT, STRUT, GOOSE, LOOK, FLEECE and KIT. The graph below (Figure 1) illustrates the dispersion of the mean average of the vowel sounds produced by the participants during the recording sessions. The graph represents a sagittal section of the mouth, and it indicates the phonetic space where vowel sounds occurred. Every dot in the diagram is one of the 10 measured sounds. The symbols within the graph represent any of these 10 sounds and the colour division differentiates between pretest (red) and posttest (blue) results. At the bottom of the graph the symbols and the corresponding F2 frequency are shown. The mean averages of the 10 vowel sounds in the diagram have been incorporated in the Tables (in this section, see 4 and 5) below. Note, WM’s NURSE vowels cannot be compared, because his second production of this typical vowel sound was, unfortunately, distorted by background noises in the recording.

Table 4 Mean F1 and F2 frequencies of WM’s vowels in pretest recording

1	Wells' F2	Wells' F1	F2	F1
Trap	1760	800	1683	426
Dress	2060	600	1610	439
Nurse	1480	560	1473	404
George	760	480	1245	480
Lot	920	560	1310	575
Strut	1320	760	1427	488
Goose	920	320	1559	314
Look	940	380	1328	367
Fleece	2620	280	2144	297
Kit	2220	360	1889	324

Table 5 Mean F1 and F2 frequencies of WM’s vowels in posttest recording

2	Wells' F2	Wells' F1	F2	F1
Trap	1760	800	1673	438
Dress	2060	600	1607	445
Nurse	1480	560	--	--
George	760	480	1386	543
Lot	920	560	1127	530
Strut	1320	760	1579	513
Goose	920	320	1462	309
Look	940	380	1255	336
Fleece	2620	280	2191	288
Kit	2220	360	1910	325

Generally, for WM it seems that - when comparing his first (red) and second (blue) recording in Figure 1 - the sounds are more dispersed in the second recording. When we observe the open front vowels (to the left of the diagram) and all of the back vowels (to the right of the diagram), whether open or close in F1 values, they seem to be pushed more towards the outer edges of the spectrum during the second production; thus either fronting, backing or lowering in quality.

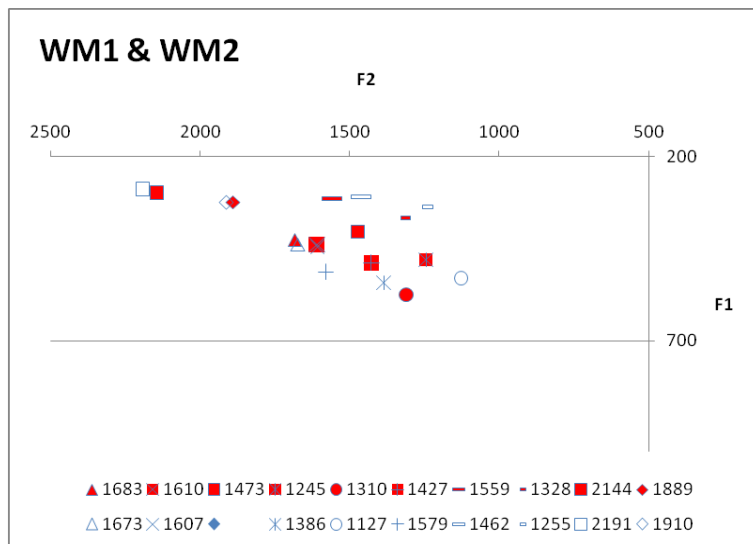


Figure 1. WM's phonetic space. Pretest (red) and posttest's (blue) monophthongal vowel results. The symbols represent formant frequencies.

The most progressive movements here can be seen for LOT (pretest mean F2: 1310 and F1: 575; posttest mean F2: 1127 and F1: 530) and STRUT (pretest mean F2: 1427 and F1: 488; posttest mean F2: 1579 and F1: 513), as they move in opposite directions. LOT moves to the back and closes and STRUT moves to front and opens slightly. LOT moves towards the standard, whereas STRUT only moves towards the standard in terms of F1 frequency; its F2 frequency moves away from the standard. This shows that there may be a general dispersion for all vowels, albeit small, but it is not enough yet to make any sort of claims. Only for FLEECE and KIT WM has an approach successful of achieving the standard. For all of the other tokens either F1 or F2 moves away from the standard, rather than towards it.

Phonetic results of participant M's pretest and posttest

Participant M shows a different pattern altogether. The largest changes were found for STRUT (pretest F2: 1592 and F1: 424; posttest F2: 1740 and F1: 528) and LOOK (pretest F2: 1076 and F1: 311; posttest F2: 1320 and F1: 319) and both GEORGE (pretest F2: 1083 and F1: 353; posttest F2: 1187 and F1: 442) and LOT (pretest F2: 1052 and F1: 376; posttest F2: 1183 and F1: 407) were fronted and lowered (see Figure 2). It is remarkable that all of the vowels are relatively closed sounds to begin with, indicating the distinct position of his tongue throughout his speech.

Table 6 Mean F1 and F2 frequencies of M's vowels in pretest recording

1	Wells' F2	Wells' F1	F2 (M)	F1 (M)
Trap	1760	800	1790	350
Dress	2060	600	1705	339
Nurse	1480	560	1584	324
George	760	480	1083	353
Lot	920	560	1052	376
Strut	1320	760	1592	424
Goose	920	320	1282	294
Look	940	380	1076	311
Fleece	2620	280	2297	270
Kit	2220	360	1964	313

Table 7 Mean F1 and F2 frequencies of M's vowels in posttest recording

2	Wells' F2	Wells' F1	F2 (M)	F1 (M)
Trap	1760	800	1835	403
Dress	2060	600	1728	378
Nurse	1480	560	1556	377
George	760	480	1187	442
Lot	920	560	1183	407
Strut	1320	760	1740	528
Goose	920	320	1406	313
Look	940	380	1320	319
Fleece	2620	280	2281	276
Kit	2220	360	2003	320

Unlike WM's data, which showed vowels that moved to a more open and closed position quite randomly, all of M's vowels moved to a more open position and, with the exception of FLEECE and NURSE, the vowels fronted as well (Figure 2). For M two vowels, DRESS and KIT moved towards the standard and all of the others moved towards some other non-standard direction. However, it has to be noted that in terms of F1 frequencies, he is admirably successful. All mean F1 frequencies move towards the standard (see Table 6 and 7). This is, however, a change which is likely to be hardly discernible, because the change involves only 50 hertz or less for 9 out of 10 vowels. For his F2 frequencies only 5 out of 10 vowels show a change larger than 100 hertz. Following the 'cutoff model' by Smakman and De France (2014), F1 frequency changes considering less than 50 hertz and F2 changes considering less than 100 hertz are considered to be hardly noticeable at all.

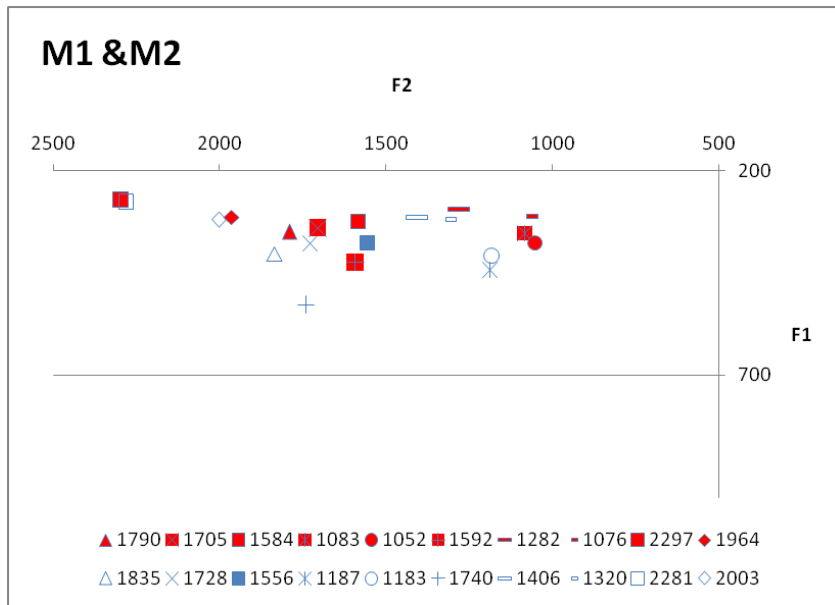


Figure. 2 M's phonetic space. Pretest (red) and posttest's (blue) monophthongal vowel results. The symbols represent formant frequencies.

Phonetic results of participant W's pretest and posttest

Below W's results demonstrate another interpretation of the command. The largest difference between the first and second recording (Tables 8 and 9) was hard to find. For W a progress of only 64 hertz for his F2 frequency is large since his other progress is invariably smaller. Within the small changes W goes through in terms of his vowel quality, two vowels progress towards the standard (STRUT: pretest F2: 1201 and F1: 410; posttest F2: 1262 and F1: 418; FLEECE: pretest F2: 2072 and F1: 263; posttest F2: 2136 and F1: 274) and the other six vowels either stagnate or move in opposite direction in terms of F2 frequency. Similar to M's results though, his F1 frequencies move towards the standard. In the Figure (3) it shows that W has a tendency to set his back vowels in relatively closed position, while his front vowels show more dispersion.

Table 8 Mean F1 and F2 frequencies of W's vowels in pretest recording

1	Wells' F2	Wells' F1	F2 (M)	F1 (M)
Trap	1760	800	1616	416
Dress	2060	600	1680	425
Nurse	1480	560	1238	384
George	760	480	999	406
Lot	920	560	978	392
Strut	1320	760	1201	410
Goose	920	320	1144	330
Look	940	380	1170	317
Fleece	2620	280	2072	263
Kit	2220	360	1902	345

Table 9 Mean F1 and F2 frequencies of W's vowels in posttest recording

2	Wells' F2	Wells' F1	F2 (M)	F1 (M)
Trap	1760	800	1603	422
Dress	2060	600	1610	430
Nurse	1480	560	1195	404
George	760	480	999	454
Lot	920	560	982	399
Strut	1320	760	1262	418
Goose	920	320	1209	327
Look	940	380	1185	322
Fleece	2620	280	2136	274
Kit	2220	360	1877	348

Overall, his vowel pronunciation did not change much altogether, most changes were well below 20 hertz for his F1 values, and his F2 values changed below 100 hertz for 9 out of his 10 values. It is thus to be expected that in the survey W will probably not be found to alter his pronunciation much, although his articulation and intonation may prove something else.

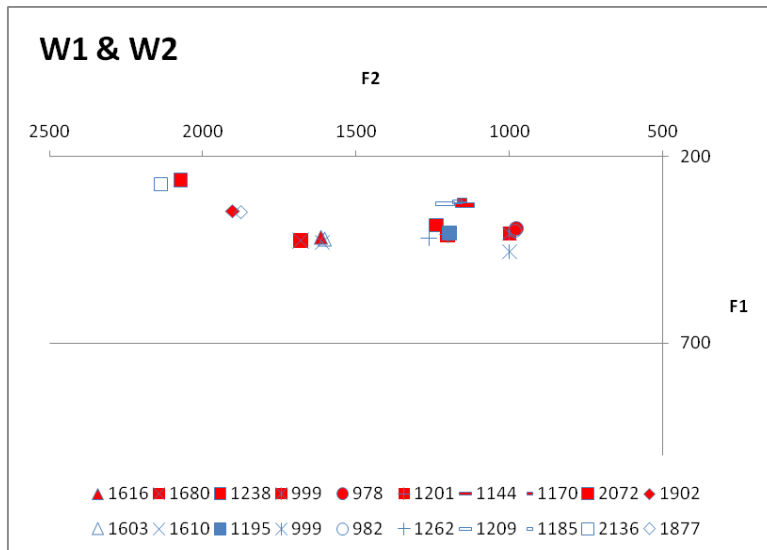


Figure 3. W's phonetic space. Pretest (red) and posttest's (blue) monophthongal vowel results. The symbols represent formant frequencies.

Phonetic results of participant JW's pretest and posttest

JW's data show more dispersion than the other speakers. Tables 10 and 11 demonstrate that the vowels

in the second recording move to the front and the back of the mouth and both close and open the vowel positions. The largest changes can be found for the LOOK vowels (pretest F2: 1552 and F1: 397; posttest F2: 1324 and F1: 388) and LOT (pretest F2: 1282 and F1: 653; posttest F2: 1146 and F1: 642), NURSE (pretest F2: 1478 and F1: 574; posttest F2: 1322 and F1: 518) and GOOSE (pretest F2: 1399 and F1: 305; posttest F2: 1536 and F1: 283). Although the latter heads into the opposite direction of the standard, they all display a movement of over 100 hertz along the F2 axe too. Although this may seem quite random at first, when comparing these results to the standard the vowel positions seem to progress towards it more than the other participants' positions. Moreover, five of the vowels (TRAP, DRESS, LOT, STRUT, LOOK) progress towards the standard while only three regress towards a more non-standard position.

In these analyses, however, we have analysed NURSE and GEORGE similarly to the other vowels. In the Methodology, it was already pointed out that these vowels are greatly influenced by a natural tendency to pronounce the 'r' present in the sounds' common environments. If we were to leave out these tokens, JW is successful in adapting his vowel sounds to a more English-like variant of the vowels, except for GOOSE, which we already discussed was an unfamiliar word for our participants. In the visualized graph he shows a greater tendency to produce open vowels than the others. However, Figure 4 displays an inclination towards an increased output of open vowels as well.

Table 10 Mean F1 and F2 frequencies of JW's vowels in pretest recording

1	Wells' F2	Wells' F1	F2 (M)	F1 (M)
Trap	1760	800	1697	527
Dress	2060	600	1566	527
Nurse	1480	560	1478	574
George	760	480	1148	549
Lot	920	560	1282	653
Strut	1320	760	1501	528
Goose	920	320	1399	305
Look	940	380	1552	397
Fleece	2620	280	2045	273
Kit	2220	360	1929	334

Table 11 Mean F1 and F2 frequencies of JW's vowels in posttest recording

2	Wells' F2	Wells' F1	F2 (M)	F1 (M)
Trap	1760	800	1721	554
Dress	2060	600	1636	573
Nurse	1480	560	1322	518
George	760	480	1052	612
Lot	920	560	1146	642
Strut	1320	760	1396	540
Goose	920	320	1536	283
Look	940	380	1324	388
Fleece	2620	280	2081	285
Kit	2220	360	1903	379

The interesting findings are in the fact that the speakers who lower their back vowels more in both tests generally seem to have better results for their second recording session. However, it is interesting to find that W and M achieve positive results in terms of their F1 productions, or height. Every mean vowel average is successful, regardless of the F2 frequency results. They initially produced the vowels in a position that was too closed and both of them opened their jaws more during the second recording session.

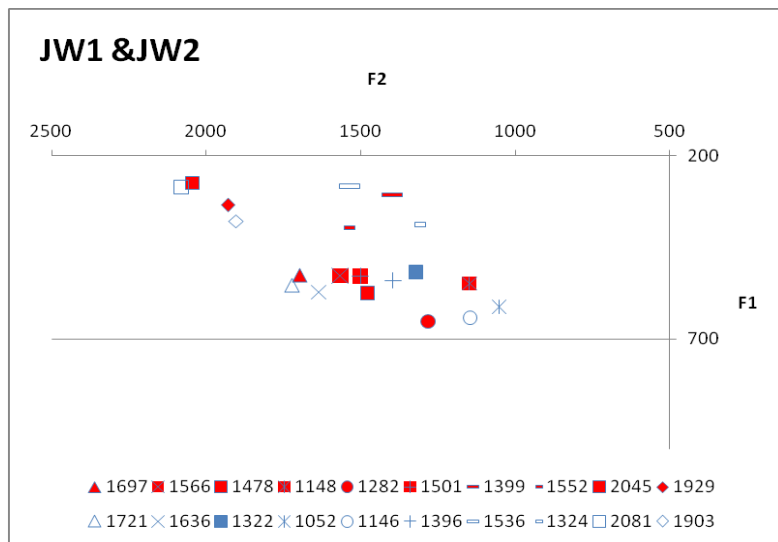


Figure 4. JW's phonetic space. Pretest (red) and posttest's (blue) monophthongal vowel results. The symbols represent formant frequencies.

The following section shows confirmations of this finding by looking at the speakers' personal opinions on the reason for a difference between the first and second recording. However, it presents no information on JW and WM's lowering of their voices, but it does provide us with limited information on their perception of and attention to their speech.

Participants' interpretations

As noted earlier in the methodology, at the first recording session the participants were instructed to simply read out the text. At their second attempt, however, they were instructed to speak more English-like, giving them an opportunity to exaggerate as much as they liked. They did not receive a very directed instruction, leaving it up to them to decide what more English-like would be. After the second recording they were asked about the difference between their first and second recording session (see Appendix I).

Although W stated that he tried to pronounce the sounds more with his tongue to the front of his mouth and add more of an accent (see Appendix I, there is no obvious evidence of this in his use of monophthongal vowels). M's consideration of consonants (see Appendix I) is possibly reflected in the fact that there was little change in his vowels, although he quite consistently fronted and lowered most of his vowels. Only four out of W's ten tokens successfully changed as he 'pronouncing the sounds more with my tongue moved to the front.' The other six times he did exactly the opposite. That being said, both JW and WM were able to describe that they tried on more of an accent: 'as English as possible,' (JW) and 'added more of an accent' (WM) and the results show that they were relatively successful in altering their pronunciation towards the standard.

Difficulties in the vowel study results

In WM's case the NURSE vowels proved not to be useful due to technical malfunctions and his GEORGE vowels were too far-removed from the general standard, partly because of the subsequent /r/ sound. As mentioned before this is quite as expected. However, for the other participants, and WM's first recording as well, the NURSE vowels were all well pronounced and I was able to retrieve useful sound files from the recordings, despite the /r/ sounds that were spelled out in each word. Maybe they were more inclined to lengthen their vowel and delete their /r/s here, because they had been exposed to an RP variant more than a GA variant after all. However, WM was not the only participant whose GEORGE vowels were too far removed from the standard; all participants produced GEORGE vowels that were not useful for this part of the research. Apart from some words that had to be removed from the data per person no other discrepancies worth mentioning were found.

4.2. Survey results

A small number of people took part in the questionnaire, maintaining the qualitative nature of this research. A total of four people answered all of the questions, while others stopped in the middle of the question sheet, probably due to its length and the requirement that the participants had proper sound equipment on their computer. Thus, some of the provided answers could not be incorporated in the research, as it is important to have solid data, leaving the research to have a more qualitative approach.

In this survey two females and two males participated. Three had a Master's educational level and one a Bachelor's level. Three were non-native speakers of English; two from the Netherlands, one from Norway and one native speaker from Ireland. Their frequency of conversing with non-native speakers of English ranged from daily to about once a month. None of them had ever participated in a similar experiment before. The participants were asked to rate the speakers' levels of English, ranging from 'beginner' to 'near-native/native' on a scale of 1-5 (1=beginner, 2=pre-intermediate, 3=intermediate, 4=advanced, 5=near-native/native) and mention the feature of speech that influenced their judgement. The excerpts were presented to the participants in a random order. In the following section, their individual results will be discussed.

WM's posttest excerpt was judged differently by all participants, one deemed him to be a 'beginner', another 'pre-intermediate', another 'intermediate', and one thought he was 'advanced'. His pretest outcome, however, had two votes for 'intermediate' and two votes for level 'advanced'; an apparent decrease in his level of proficiency. This result may be due to the fact that in his second recording there were more pauses, he was 'omitting words', used inappropriate grammar and lacked in 'pronunciation/articulation' (see Appendix III), which we would actually expect to happen in a pretest. It was also the first recording that our participants listened to, so it may have taken them some practice to familiarise themselves with the intended pronunciation levels. They had limited experience in similar types of questionnaire, so this is quite reasonable to assume.

Participant M was rated near pre-intermediate for his pretest. One listener went for 'beginner',

two for 'pre-intermediate' and one for 'intermediate'. His posttest pronunciation was rated more or less the same, but had one more vote for 'intermediate'. He was considered to have great difficulty with his pronunciation, rate of speaking and he was found to insert pauses in weird places. One participant also labelled 'fortis-lenis issues' to be a factor.

For his pretest, participant W was labelled to be a 'pre-intermediate' by two of the participants and 'intermediate' by the other two. He is the second, seemingly, unsuccessful speaker in this part of the research, since only his posttest shows that he was voted 'beginner'. It seemed that W slowed down his articulation, hindering easy listening for the participants.

JW was voted to be at 'intermediate' level unanimously in the pretest. In the posttest recording, however, two of the voters thought he had improved and he was voted to be at 'intermediate' level twice and 'advanced' level twice. From the data it can be gathered that his results were so evident, because there were no more repetitions in his speech that hindered intelligibility, he reduced the number of pauses in his speech and changed his intonation effectively.

Table 12 Pre- and posttest show perceived levels of English: ratings for all 4 participants

	Beginner	Pre-intermediate	Intermediate	Advanced	Near-native/native
WM pretest		xx	xx		
WM posttest	x	x	xx		
M pretest	x	xx	x		
M posttest	xx		xx		
W pretest		xx	xx		
W posttest	x	x	xx		
JW pretest			xxxx		
JW posttest			xx	xx	

These results (see Table 12) indicate that two speakers (WM and W) were unsuccessful in changing their pronunciation, one was still relatively the same (M) and one was successful (JW) at changing his English to a more native-like standard. It is interesting that, as expected, the native speaker gave the speakers' levels of English highest rates (see Appendix III). The other three gave the speakers ratings that were generally in the levels beginner, pre-intermediate and intermediate, and the native speaker rated them on intermediate or advanced levels.

5. Discussion

5.1. Introduction

The original motivation for looking into this research topic was based on real-life classroom observations. I found that one of my students was able to audibly alter his pronunciation after a simple command, rather than after extensive teaching. Most studies explore the idea that lengthy teaching courses are required to effectuate a positive change. This made me wonder if a nudge like this would work for more people, and I was excited to test it. To do so I presumed the following: when asking an L2 speaker to speak more English-like, it will improve. Such findings may be retrievable with both phonetic and perceptive analysis, and were thus executed both. For the phonetic analysis I decided to look primarily for vowel output, although in earlier research (Jenkins, 2002) it was noted that particularly consonant production affects the way in which listeners perceive the speaker and mistakes in this phonetic region are more likely to be observed than mistakes in vowel production. As a result, more research has been done on the effects of consonant production than on vowel production. Yet, mistakes in vowel production can - in my opinion - seriously harm intelligibility. Therefore - in this research - the phonetic analysis focussed on the production of vowels (monophthongs), and is seconded by results from listeners who analysed the data, more generally, on the participants' language proficiency levels.

In setting out this research I realised that I required several participants who would be willing to take part in the research. Originally, my findings resulted from a situation where my student read out a piece of text. I then asked him to read it out again, but with exaggeration. I did the same thing with my participants in this research. In order to obtain and analyse the data their voices were recorded both before and after the command (pretest and posttest). These recordings were entered into a phonetic analysis program called Praat (Boersma and Weenink, 2013), which enabled me to measure the participants' output objectively. I drew specific information from the program regarding the participants' vowel output and focussed on F1 and F2 frequency sound waves. The combination of these two frequencies provides enough information to describe the vowels' place of production. When participants' output changed their vowels in the second recording it became discernible in the program. In addition, the recordings were played to objective listeners who estimated the speakers' general level of proficiency. These two methods were used as to enable cross-referencing. Should these two methods confirm each other, the research would be able to present more interesting findings.

In the following chapter the main findings will be presented, followed by answers to the original research question and a discussion of the hypothesis. Then, my research will be compared to other findings in the literature, which will lead to a discussion at the end of the chapter.

5.2. Main findings

Four people volunteered to be recorded. I obtained background information from them and measured their results individually. They can be found in the text titled WM, M, W and JW. I will discuss their results in the same order as they were discussed in the results chapter. Phonetically WM was able to alter his pronunciation slightly in the second recording and he made some positive changes (see section 4.1), but most of his changes were within Smakman and De France's (2014) cutoff model (see section 3.4). The listeners were not able to perceive any change (Table 12). WM thus made some alterations in his pronunciation, yet from his vowel results and his overall pronunciation we can conclude that they were not worth mentioning. M made some phonetic changes to his vowels and I discovered that all of his F1 values were higher in the second recording (see Tables 6 and 7). However, these changes were, again, within the cutoff model. In the listeners' assessment no audible changes were found. W's results were quite similar to M's: all of his F1 values were higher in the second recording (see Tables 8 and 9), but these changes (again, within the cutoff model) were inaudible to the listeners. JW's results (see Tables 10 and 11) were more distinguishable all together. From the Figure (4) it is clear that his F1 values were more defined and dispersed. His open vowels started out more open. Five of his vowels moved towards the standard (as designed by Wells, 1980s) in his second recording, and most of his changes reach outside of the cutoff model. This is confirmed in the analysis of the listeners. Two of the four listening participants decide that in the second recording JW is a more proficient speaker of English.

5.3. Answers to research questions

Three questions were asked at the start of this research: is there an phonetically measureable change in the vowel output of the participants? Is there an audibly perceptible change in the participants' overall pronunciation? What do the results tell us about the speakers' acquired truths about English pronunciation? For all four participants phonetic changes in their vowel production were measured (Tables 4-11). Most of them were insignificant, but some were perceptible. Only WM and JW showed changes outside of the cutoff model. The two participants who changed the least did show a remarkably uniform change in their F1 frequencies, which increased in their posttests.

In response to the second question JW is the only participant whom we can say of that he has successfully changed his pronunciation to the effect that two of the listeners (see Table 12) considered his second recording to be of a higher proficiency level than his first recording. The other participants changed too little to be perceived by the listeners.

At this point, the results are unable to inform us about the participants' acquired truths of English pronunciation (question three), because three of the participants showed no remarkable change and only one participant did. The brief reports (see Appendix I) on what they changed in the second recording show that the person who changed towards Wells' standard thought he used a 'funny voice', suggesting that his second attempt sounded weird and different from his usual L2 attempts.

5.4. Original hypotheses

It proved to be a very bold presumption to say: 'when asking an L2 speaker to speak more English-like it will improve'. Anticipating positive results, they were less informative than expected. It did, however, show that the participants' scope in which they produce vowels shows a kind of flexibility that seems to be limited to the range or scope that their vowels have in the pretest, which can be expected actually when you consider it. The data show that, although all participants change their output in their second recording to some extent, not all of them are successful at aiming for the right direction (i.e. towards the standard). Thus, rather than claiming that the speaker will improve he/she will at least display changes in their pronunciation. However, taking the cutoff model in mind, it stands to argue that three of the four participants were not even very successful in this respect, as vowel production within a single person may change all the time (Manuel, 1990; in Mitsuya et al, 2011: 2979). So, the measured change may not have been related to the command. If we continue this approach only one participant was successful in both improving and changing his pronunciation, according to the measurements that were done in this research.

5.5. Comparison with other research

In the following section, some of the data is compared to the data gathered by other Dutch researcher who decided that some English vowels are more difficult for Dutch students of English than others. The said difficult ones that were present in this research are compared to theirs. In terms of vowels and their influence in producing comprehensible output I present some interesting findings. The last four paragraphs discuss factors that, according to the literature, may have influenced speech and were relevant to this research.

De France and Smakman (2013) and Smakman and De France (2014) described English vowels that Dutch learners easily fail at. Their findings are partly confirmed. The TRAP vowel /æ/ was pronounced too closed, as they suggested, as was the STRUT vowel /ʌ/. The LOOK vowel /ʊ/ was pronounced too far to the back of the mouth as well. However, the LOT vowel /ɒ/ was pronounced too closed - only for two participants - and the other two were within a range of 50 hertz (speaker WM) to 100 hertz (speaker JW) hertz (Tables 4 and 5; Tables 10 and 11) of the suggested deviation. It is interesting to find that JW shows an opposite tendency and pronounces his LOT vowels even opener than the standard used in this research (Wells, 1980s).

Although Jenkins (2002) decided that vowels are less important for comprehensibility than consonants and suprasegmental features and I tend to agree with her, I was intrigued by the relation between the levels of proficiency (rather than comprehensibility) indicated by the listeners and the closeness of their vowel output to the indicated standard. The participant who used vowels closer to the standard was also considered to have a higher standard of English, similarly the participants who

produced vowels further from the standard where considered to have a lower level of English. It may have been the case that the more successful participant had better pronunciation skills overall, including his consonants and suprasegmentals, yet it would be another useful research to investigate the distance that vowels are allowed to deviate from the standard in order to be scaled at the proficiency levels indicated in this research (Table 12).

Nemser (1991) discussed the three stages of learning a second language and we cannot apply these to the research. It would be quite the exaggeration to decide upon the participants learning stages from the gathered data. If we look at their entry levels and the levels they were perceived to be in the survey it can be inferred that WM, M and W may be at transferring levels, and JW at approximating level (see Nemser, 1991 in Cook, 2006: 71). However, none of the evidence provided in this research can lay any claims on this topic.

It is possible to hypothesize that the participants' learning stages prevent them from 'maximizing their capabilities for speech learning' (Mulford and Hecht, 1980). Yet it is also possible to hypothesize that social or psychological factors prevent the participants from maximizing their potential. It is most likely that both factors are powerful forces in speech learning, although this research showed two speakers greatly inclined to produce very low F1 values in their first recording, indicating vowel closeness. This might indicate that they experienced a form of tension during the recording sessions, probably because they are not used to speaking out loud (in English) much. The speakers are used to a classroom setting in which Dutch is the norm, and English the deviant.

I believe that Stampe's (1969, 1979) research proposal was a relevant one to this research. He theorised that 'the phonological system of a language is the residue of a universal system of processes, governed by forces implicit in human articulation and perception'. Mostly, I believe that 'the mechanisms of suppression' are relevant to this research (in Macken and Ferguson, 1981:112). The phonetic results display a very close-knit interplay between their first and second vowel production. Only WM, to a very little extent, and JW are able to change their production perceptibly (see Figures 1-4). It seems that the participants are limited in their capabilities to change their output. Whether their limitations are a result of these intrinsic factors, or the social or psychological factors noted by Mulford and Hecht (1980) or related to their learning stages, is at this point open for debate. However, in the final discussion a view will be presented that I consider to be relevant and may be a crucial part of these factors and stages at the same time.

Another factor that seemed to be at play in analysing the participants' results, could be found in their pronunciation of the word 'goose'. Apparently, the word was new to their vocabulary, which caused participants to stutter and influenced the results badly. At first, I thought that Selinker's (1969) 'fossilisation' was what was happening to the participants, but how can a new word be overtaken by fossilisation processes? Then I realised that this was a classic example of Mulford and Hecht's (1980) transfer process. The participants were yet unable to realise an L2 form of the new word, because they were using their L1 knowledge to 'make do' with their unfamiliarity of this new word. Their faulty attempts all resembled Dutch situations which have an onset consonant, followed by 'oo' and a coda consonant.

5.6. Limitations and future research

The next logical step towards improving my research would be to have more speakers participate in both the phonetic analysis as well as in the listening part of my research, thus aiding a more quantitative approach. Although the nature of this research gave me the opportunity to look at individual progress, a combination of research methods will be able to make more definitive claims. It will also be necessary to improve the text that was used in this research, because I had to dispose of quite a few tokens, and it would be very convenient to do a pilot first. Unfortunately, I did not have an opportunity to do so. Any other researcher would also be advised to record the speakers in their native language too, with a similar text, in order to provide very useful background information on the output of their first L2 recording. This will aid a very thorough qualitative research.

As this research was limited to only Dutch adult learners it would be informative to do similar research among children, adolescents and learners with different language backgrounds. It will be useful to see how these language backgrounds can affect the results. Moreover, the listeners are required to have a greater difference in their proficiency backgrounds as well as their cultural backgrounds. As we have seen these aspects may affect their assessments in a relevant way.

In terms of gaining knowledge about comprehensibility this research has been able to show a relation between vowel output and perceived proficiency. It might be useful to research the formant values of vowels and the indicated proficiency of the speakers. For instance, if the formant values allow some distance from the standard, even when a speaker is considered to have a high level of English, this could radically indicate the lesser necessity for future learners and teachers of English to direct attention to these vowels.

The final issue in this research was that the speakers needed to read out a piece of text. This method is a rather formal way of researching, which was decided upon because of practical considerations. In the research I used a technique allowing the participants to read out a piece of text twice to measure the change in their vowel formant values within the phonetic space. This piece of text was used for both the pretest and the posttest. Timmer and Schiller (2012) investigated the role of orthographic and phonological information in reading aloud. Fortunately their research was executed on Dutch-English bilinguals and native speakers of English. They presented results that illustrate that 'late L2 speakers exhibit a Masked Onset Priming Effect similar to that of native speakers.' This effect can be illustrated by a reading aloud exercise: reading aloud will go faster when 'targets (e.g., PAIR) are preceded by visually masked primes sharing just the onset (e.g., *pole*) compared to all different primes (e.g., *take*)' (Schiller, 2008: 952). A prime can be defined as an effect in the memory that implicitly takes place when exposure to one stimulus is affected by a response to another stimulus. The response of the late bilingual speakers implied that orthographically both types of speakers digest the visual orthographical information quite similarly.

The Masked Onset Priming Effect was first established by Forster and Davis (1991) and drew on the concept that 'when prime and target have the same onset, the first segment of the target is already activated and can be named faster' (Schiller, 2008: 954). The text used in this piece of research contains many new words with unprimed pronunciations and sometimes even words that the participants have

never pronounced in their lives. Awareness of this may help in understanding when and why the participants may linger longer over certain words and have troubles with certain words. Therefore it needs to be taken into account that 'processing overload can lead to serious pronunciation error' (Jenkins, 2002: 90). Although the participants in this research did not need to memorize or relocate words from their memories, the fact that many of the words are unprimed and may have had limited familiarity to them, may have given cause to unwavering focus which may have negatively influenced their pronunciation.

5.7. Discussion & conclusion

Although the research questions provided limited results, the overall results were surprisingly instructive. Comparisons with other research showed that even when research is conducted with a limited instruction, the participants' variables are highly informative. One of the most surprising aspects of this research was the relations that I found between the results and the so-called dynamic process.

Probably, Stampe's proposal was one of the pioneering works of the final Chaos theory, because in this work comparable views of how forces implicit in human articulation decide on the produced output are present. This can be seen as 'suppressed' or organic. Where several subsystems of human articulation, perception, psychological factors and external input exist, a dynamic process must evolve from it. In my opinion, even Jenkins' information on the importance of consonants rather than vowels shows that these language segments are interdependent and future research may present even more convincing results.

I would like to conclude that a comparison of the speakers' individual vowel patterns provides grounds to suggest that language can be seen as a dynamic process (De Bot, Lowie, Verspoor, 2007; Larsen-Freeman, 1997). Here, I need to refer to the fact that the three participants who remained more static in their output had a lower level of proficiency, as shown in the methodology (Table 1) and confirmed in the results (Table 12). Their capabilities of changing their output were smaller (mostly below a 100 hertz range for F2 and below a 50 hertz range for F1) than that of JW, who was estimated to exhibit a higher level of proficiency (Table 1 and Table 12). He was able to show a greater change in his output, and showed more instances of moving towards the direction of the standard. His phonetic space in Figure 4 also shows his greater scope. I would like to argue for a system where a speaker's vowel pattern is exponentially related to his first performance when stimulated to produce a version closer to the standard. The speakers starting with a system that places vowels, as seen in the Figures, closer together have limited success of changing their vowels perceptibly, whereas JW already showed a system of vowels with a larger phonetic space and produced more open lower vowels in the first recording. His second recording showed that he was not only more successful at aiming for the standard, he was able to change perceptibly, beyond the cutoff model.

Bibliography

- Best, C. T. (1995). A direct realist view of cross-language speech perception. In: W, Strange (Ed.). *Speech Perception and Linguistic Experience: Issues in cross-Language Research* (pp. 171-204). Timonium, MD: York Press.
- Boersma, P. & Weenink, D. (2013). Praat: doing phonetics by computer [Computer program]. Version 5.3.57. retrieved 2 July 2014 from <http://www.praat.org/>
- Brière (1966). Quantity before quality in second language composition. *Language Learning*. 16. 3-4; 141–151. University of Michigan.
- Bygate, M. (1988). Units of oral expression and language learning in small group interaction. *Applied Linguistics* 9/1. 59-82.
- Chaudron-Hoogbeem, L. & Yilmaz, A. (2013). *20/20 English Techniek. Werkboek A2*. Amersfoort: ThiemeMeulenhoff.
- Chomsky, N. (1965). *Aspects of the Theory of Syntax*. Cambridge, Massachusetts: MIT Press.
- Collins, B. and Mees, I. M. (2003). *Practical Phonetics and Phonology: a Resource Book for Students* (Routledge English Language Introductions). Routledge/Taylor & Francis. London & New York.
- Collins, B., Hollander, S. P. Den, Mees, I. M. & Rodd, J. (2011). *Sounding Better: A Practical Guide to English Pronunciation for Speakers of Dutch*. Holten. Walvaboek.
- Cook, V. J. (2008). *Second Language Learning and Language Teaching*. 4th edition. Hodder Education.
- De Bot, K. and Lowie, W. and Verspoor, M.(2007). A Dynamic Systems Theory approach to second language acquisition. In: *Bilingualism: Language and Cognition* 10 (1). 7–21. Cambridge University Press.
- De France and Smakman (2013). The effects of teaching Dutch learners British English consonants. An experimental study. In: Dick Smakman & Laurent Willemsen (Eds.) *Proceedings of the Van Schooten tot Scriptie Colloquium 2012*. Leiden. 8 & 9 June 2012.
- Derwing and Munro (2005). Second language accent and pronunciation teaching: a research-based approach. In: *Tesol Quarterly* Vol. 39. No. 3: 379-397. Retrieved from <http://www.jstor.org/stable/3588486> . Accessed: 29/01/2015.
- Deterding, D. H. (1997). The formants of monophthong vowels in standard southern British English pronunciation. *Journal of the International Phonetic Association*. 27. 47–55.
- Fant, G. (1960). *Acoustic Theory of Speech Production*. Mouton & Co. The Hague. Netherlands.
- Ferragne, E. & Pellegrino, F. (2010). Formant frequencies of vowels in 13 accents of the British Isles. *Journal of the International Phonetic Association*. 40: 1; 1-34.
- Flege, J. E. (1987). The production of "new" and "similar" phones in a foreign language: evidence for the effect of equivalence classification. In *Journal of Phonetics*. 15:47-65. Academic Press Inc. London.

- Flege, J. E. (1995). Second language speech learning: theory, findings and problems. In: W. Strange (ed). *Speech Perception and Linguistic Experience: Theoretical and Methodological Issues in Cross-Language Research*. (233-272). Timonium, MD: York Press.
- Forster, K. I. and Davis, C. (1991). The density constraint on form priming in the naming task: Interference effects from a masked prime. *Journal of Memory & Language*. 30, 1-25.
- Gussenhoven and Broeders (1997). *English Pronunciation for Student Teachers*. Second edition. Groningen: Wolters-Noordhoff-Longman.
- Gussenhoven, C., Repp, B. H., Rietveld, A., Rump, W. H. & Terken, J. (1997). The perceptual prominence of fundamental frequency peaks. *Journal of the Acoustical Society of America*. 102; 3009-3022.
- Hayward, K. (2000). *Experimental Phonetics*. Harlow, UK: Pearson. p. 149. ISBN 0-582-29137-2.
- Hempelman, R. (2013). *20/20 English Techniek. Handboek*. Amersfoort: ThiemeMeulenhoff.
- Honorof et al. (2000). *Comma Gets a Cure*. Retrieved from <http://www.dialectsarchive.com/wp-content/uploads/2012/10/COMMA-GETS-A-CURE.pdf> . Consulted 29-01-2015.
- Huckvale, M. (2014) [diagram] Adult male formant frequencies in Hertz collected by J.C. Wells around 1960. PALS1004 Introduction to Speech Science, UCL Division of Psychology and Language Sciences, University College London, Retrieved at 7 April 2015 from <http://www.phon.ucl.ac.uk/courses/spsci/iss/week5.php>
- Jenkins, J. (1998). Which pronunciation norms and models for English as an International Language? In: *ELT Journal Volume 52/2*, Oxford University Press.
- Jenkins, J. (2002). A sociolinguistically based, empirically researched pronunciation syllabus for English as an international language. In: *Applied Linguistics*. 23. 1; 83-103.
- Jespersen, O. 1964 (1946). *Mankind, Nation and Individual from a Linguistic Point of View*. Bloomington: Indiana University Press.
- Johnson, K. (2002) *Acoustic and Auditory Phonetics*. 2nd Edition (1st edition, 1997). Oxford: Blackwell.
- Klaassen, H. & Schreurs, W. (2013). *20/20 English Techniek. Werkboek B1*. Amersfoort: ThiemeMeulenhoff.
- Lenneberg, Eric H. (1967). *Biological Foundations of Language*. John Wiley and Sons Inc.
- Ladefoged, P. (2006). *A Course in Phonetics (Fifth Edition)*. Boston, MA: Thomson Wadsworth. p. 188. ISBN 1-4130-2079-8.
- Ladefoged, P. and Johnson, K. (2011). *A Course in Phonetics: 6th Edition*. Wadsworth. Cengage Learning. Boston.
- Larsen-Freeman, D. (1997). Chaos/complexity science and second language acquisition. In: *Applied Linguistics 18: 2*. Oxford University Press.
- Leech, G. and Smith, N. (2006). Recent grammatical change in written English 1961-1992: some preliminary findings of a comparison of American with British English. *Language and Computers. the Changing Face of Corpus Linguistics*. Ed. Renouf, A. and Kehoe, A. 20; 185-204.

- Lochtman, K., Lutjeharms, M. & Kermarrec, G. (2004). Duits en andere 'vreemde' talen in Brussel: Een attitudeonderzoek bij Brusselse studenten uit een economische studierichting. In: A. Housen, M. Pierrard & P. Van de Craen (eds.). *Brusselse Thema's 12*. Brussel: VUB-Press. 209–240.
- Lochtman, K. & Ceuleers, E. (2005). Tweede- en vreemde-taalverwerving in een meertalige context: De rol van imago, attitudes en motivatie. *Toegepaste Taalwetenschap in Artikelen*. 74.2; 93–102.
- Lord, G. (2005). (How) can we teach foreign language pronunciation? On the effects of a Spanish phonetics course. In: *Hispania*. 88. 3; 557-567.
- Macken, M.A. and Ferguson, C.A. (1981). Phonological universals in language acquisition. In: *Annals of the New York Academy of Sciences*. 379; 110–129.
- Major, R.C. (2002). The phonology of the L2 user. In: Cook, V.J. (ed.). *Portraits of the L2 User*. Clevedon: Multilingual Matters.
- Manuel, S. Y. (1990). The role of contrast in limiting vowel to vowel coarticulation in different languages. *J. Acoust. Soc. Am.* 88; 1286-1298.
- McGovern, K. & Strange, W. (1977). The perception of /r/ and /l/ in syllable-initial and syllable-final position. *Perception & Psychophysics*. 21; 162-170.
- Melville Bell, A. (1867). *Visible Speech: The Science of Universal Alphabets*. Simkin, Marshall & Co. London.
- Meyerhoff, M. (2006). *Introducing Sociolinguistics*. Routledge, Taylor and Francis Group. London and New York.
- Mitsuya et al. (2011). A cross-language study of compensation in response to real-time formant perturbation. *J. Acoust. Soc. Am.* 130;5.
- Mulford, R. C. & Hecht, B. F. (1980). Learning to speak without an accent: Acquisition of a second language phonology. *Papers and Reports on Child Language Development*. 18: 16-74.
- Piske et al. (2001). Factors affecting degree of foreign accent in an L2: a review. *Journal of Phonetics*. 29; 191-215.
- Scherer, K. R. & Tolkmitt, F. J. (1979). The effect of stress and task variation on formant location. *Journal of the Acoustical Society of America*. Supplement 1. 66; 512.
- Schiller, N.O. (2008). The masked onset priming effect in picture naming. *Cognition*. 106; 952-962.
- Selinker, L. (1969). Language transfer. *General Linguistics*. 9: 67-92.
- Selinker, L. (1972). Interlanguage. *International Review of Applied Linguistics*. 10; 209–241.
- Smakman and De France (2014). The acoustics of English vowels in the speech of Dutch learners before and after pronunciation training. In: Caspers et al.(Eds.). *Above and Beyond the Segments*. Experimental linguistics and phonetics. 288-301. Amsterdam: John Benjamins.
- Stampe, D. (1969). The acquisition of phonetic representation. *CLS* 5. 443-453.
- Stampe, David. (1979). *A dissertation on natural phonology*. New York: Garland.

- Stevens, K. N. (1972) The quantal nature of speech: Evidence from articulatory-acoustic data. In *Human Communication: A Unified View* (edited by P. B. Denes & E. E. David, Jr.). New York: McGraw Hill. 243-255.
- Strange, W., Verbrugge, R. R., Shankweiler, D. P., and Edman, T. R. (1976). Consonantal environment specifies vowel identity. In: *J. Acoust. Soc. Am.* 60; 213-224.
- Timmer and Schiller (2012). The role of orthography and phonology in English: An ERP study on first and second language reading aloud. *Brain Research*. Volume 1483. 5 November 2012. Elsevier B.V. Consulted 8 June 2014. <http://www.sciencedirect.com/science/article/pii/S0006899312014655>.
- Titze, I. R. (1994). *Principles of Voice Production*. Prentice Hall. ISBN 978-0-13-717893-3.
- Tolkmitt, F. J., Helfrich, H., Standke, R., & Scherer, K. R. (1982) Vocal indicators of psychiatric treatment effects in depressives and schizophrenics. *Journal of Communication Disorders*. 15; 209-222.
- Tolkmitt, F. J. & Scherer, K. R. (1986). Effect of experimentally induced stress on vocal parameters. *Journal of Experimental Psychology and Human Perceptual Performance*. 12(3); 302–313.
- Trubetzkoy, N. (1969). *Principles of phonology*. Berkeley: University of California Press.
- van den Doel, R. & Rupp, L. (2014). *Pronunciation Matters - Accents of English in the Netherlands and elsewhere*. Amsterdam: VU University Press.
- Van Heuven, V. J. (1988). The significance of demonstrative choice in written Dutch. In *Lingua*. 76; 209-248.
- Verspoor, M. and Cremer, M. (2008). Research on foreign-language teaching and learning in the Netherlands (2002–2006). *Language Teaching*. 41; 183-211.
- Wieden, W. and Nemser, W. (1991). *The Pronunciation of English in Austria*. Tübingen: Gunter Narr.
- Wells, J. C. (1982). *Accents of English I: An Introduction*. Cambridge. New York: Cambridge University Press. ISBN 0-521-29719-2.
- Wells, J. C. (2000). *Longman Pronunciation Dictionary*. Second edition. Harlow: Pearson Education Limited.
- IRAL - International Review of Applied Linguistics in Language Teaching. Volume 10. Issue 1-4. Pages 209–232. ISSN (Online) 1613-4141. ISSN (Print) 0019-042X. DOI: 10.1515/iral.1972.10.1-4.209. November 2009

Appendix I

Replies from participants to 'speak more (exaggeratedly) English-like':

Dutch:

JW: 'Gek stemmetje.' 'langzamer voor mijn gevoel.' 'zo Engels mogelijke taal';

M: 'Proberen beetje op *th*[-klank] te letten.' 'de *r*[-klank].' 'redelijk hetzelfde gebleven';

W: 'Ik heb geprobeerd de klanken meer met mijn tong naar voren te plaatsen. zodat je meer een Engels accent erin krijgt.' 'bij elk woord denken: hoe is de uitspraak?';

WM: 'iets meer accent erop gelegd. voor mijn gevoel.' 'iets meer erover na gaan denken.' 'let wat meer op uitspreken'.

English translation:

JW: 'funny voice.' 'slower, I think.' 'as English as possible';

M: 'tried to be wary of the *th*[-sound].' 'the *r*[-sound]'. 'stayed fairly the same';

W: 'I tried to pronounce the sounds more with my tongue moved to the front, adding more of an English accent.' 'considering every word and think: what's the pronunciation like?'

WM: 'added more of an accent, I think.' 'thinking more about it.' 'watching my pronunciation more'.

Appendix II

Phonetic transcription of Comma Gets a Cure. Original retrieved from

<http://www.dialectsarchive.com/wp-content/uploads/2012/10/COMMA-GETS-A-CURE.pdf> . Consulted 29-01-2015. Copyright 2000 Douglas N. Honorof, Jill McCullough & Barbara Somerville.

/wel hɪəz ə stɔ:ri fə ju: /

/seərə peri wɔz ə vetərɪnəri nɜ:s hu: d bɪn wɜ:kɪŋ deɪli æt ən əʊld zu: ɪn ə dɪzɜ:tɪd dɪstrɪkt əv ðə teɪtəri /

/səʊ fɪ: wəz veri hæpi tə sta:t ə ŋju: dʒɒb æt ə sɒpɜ:b praɪvət prækʰtɪs ɪn nɔ:θ skweə nɪə ðə dʒu:k stri:t taʊə /

/ðæt eəriə wəz mʌtʃ nɪərə fɔ:r hɜ ənd mɔ: tu: hɜ laɪkɪŋ /

/i:vən səʊ ɒn hə fɜ:st mɔ:nɪŋ fɪ: felt strest /

/fɪ: eɪt ə bəʊl əv pɒrɪdʒ tʃɛkt hɜ: self ɪn ðə mɪrər en wɒft hɜ feɪs ɪn ə hʌri /

/ðen fɪ: pʌt ɒn ə plem jeləʊ dres ənd ə flɪ:s dʒækɪt pɪkt ʌp hɜ kɪt ə hedɪd fə wɜ:k /

/[h]wen fɪ: gɒt ðe: ðe: wɔz ə wu:mən wɪð ə gu:s weɪtɪŋ fɒr hɜ /

/ðə wu:mən geɪv seərə ən vɪfjəl letə frəm ðə vet /

/ðə letə ɪmpleɪd ðæt ði ænɪməl ku:d bi sʌfəriŋ frəm ə reər fɔ:m əv fɒt ən maʊθ dɪzɪ:z [h]wɪtʃ wəz sɜ:praɪzɪŋ bɪkɔz nɔ:məli ju:

wu:d əʊnli ɪkspekt tə si: ɪt ɪn ə dɒŋ ər ə gəʊt /

/seərə wəz sentɪmentəl səʊ ðɪs meɪd hɜ fi:f sɒri fə ðə bju:tɪfəl bɜ:d /

/bɪfɔ: lɒŋ ðæt ɪtʃi gu:s bɪgæn tə strʌt əraʊnd ði ɒfɪs laɪk ə lɒnətɪk [h]wɪtʃ meɪd ən ʌnsænitəri mes /

/ðə gu:sɪz əʊnə meəri hærisən kept ɔ:lɪŋ , kɒmə kɒmə , [h]wɪtʃ seərə θɔ:t wəz ən ɒd tʃɔɪs fər ə neɪm /

/kɒmə wəz strɒŋ ən hju:dʒ səʊ ɪt əd taɪk sʌm fɔ:s tə træp hə bʌt seərə həd ə dɪfrənt aɪdɪə /

/fɜ:st fɪ: traɪd dʒentli strəʊkɪŋ ðə gu:sɪz ləʊə bæʊ wɪð hɜ pɑ:m ðen sɪŋŋ ə tju:n tu hə /

/fainəli fɪ: ɛdɪnɪstəd i:θə /

/hɜr efɜ:ts wɜ: nɒt fju:taɪl /

/ɪn nəʊ taɪm ðə gu:s bɪgæn tə taɪə səʊ seərə wəz eɪbəl tə həʊld ɒnto kɒmə ənd gɪv hɜr ə rɪlæksɪŋ bɑ:θ /

/wʌn[tʃ] seərə həd mənɪdʒd tə beɪð ðə gu:s fɪ: waɪpt hər ɒf wɪð ə klɒθ ən led hɜr ɒn hɜ: raɪt saɪd /

/ðen seərə kənʃ:md ðə vets daɪəgnəʊsɪz /

/ɔ:lməʊst ɪmɪ:diətli fɪ: rɪmembərd ən ɪfektɪv trɪ:tmənt ðæt rɪkwæɪd hɜr tə meɪzər aʊt ə lɒt əv medɪsən /

/seərə wɔ:nd ðæt ðɪs kɔ:s əv trɪ:tmənt mʌɪt bi ɪkspensɪv - aɪðə faɪv ər sɪks taɪmz ðə kɒst əv penəsɪlɪn /

/aɪ kɑ:nt ɪmædʒɪn peɪŋ səʊ mʌtʃ bʌt mɪsɪz hærisən - ə mɪljəne: lɒjə - θɔ:t ɪt wəz ə fe: praɪs fər ə kjuə /

Appendix III

Survey results – Questions (p. 51-53)

Link (24-09-2014) : <http://www.thesistools.com/web/?id=422554>

Vraag:	Legenda						
What is your gender?	1 = Female	2 = Male					
What is your age?							
What is your educational level, or what is the highest educational level th...	1 = Primary education	2 = Secondary education (high school diploma)	3 = Vocational training (beroeps onderwijs)	4 = Bachelor	5 = Master	6 = PhD	7 = Other:
Other:							
Where were you born? Please indicate city, state/province and country.							
Are you a native speaker of English?	1 = Yes	2 = No					
How frequently do you speak with non-native speakers of English? (pick the ...	1 = Never	2 = About once a year	3 = About once a month	4 = About once a week	5 = Daily		
Have you ever participated in a similar experiment where you were asked to ...	1 = Yes	2 = No					
Beginner - near-native/native	1 = 1	2 = 2	3 = 3	4 = 4	5 = 5		
Pronunciation/articulation							
Intonation							
Stress/rhythm							
Speed							
Repetitions/corrections							
Pauses							
Other							
Other							
Beginner - Near-native/native	1 = 1	2 = 2	3 = 3	4 = 4	5 = 5		
Pronunciation/articulation							
Intonation							
Stress/rhythm							

Speed							
Repetitions/corrections							
Pauses							
Other							
Other							
Beginner - Near-native/native	1 = 1	2 = 2	3 = 3	4 = 4	5 = 5		
Pronunciation/articulation							
Intonation							
Stress/rhythm							
Speed							
Repetitions/corrections							
Pauses							
Other							
Other							
Beginner - near-native/native	1 = 1	2 = 2	3 = 3	4 = 4	5 = 5		
Pronunciation/articulation							
Intonation							
Stress/rhythm							
Speed							
Repetitions/corrections							
Pauses							
Other							
Other							
Beginner - Near-native/native	1 = 1	2 = 2	3 = 3	4 = 4	5 = 5		
Pronunciation/articulation							
Intonation							
Stress/rhythm							
Speed							
Repetitions/corrections							
Pauses							
Other							
Other							
Beginner - Near-native/native	1 = 1	2 = 2	3 = 3	4 = 4	5 = 5		
Pronunciation/articulation							
Intonation							
Stress/rhythm							
Speed							
Repetitions/corrections							
Pauses							
Other							

Other							
Beginner - Near-native/native	1 = 1	2 = 2	3 = 3	4 = 4	5 = 5		
Pronunciation/articulation							
Intonation							
Stress/rhythm							
Speed							
Repetitions/corrections							
Pauses							
Other							
Other							
Beginner - Near-native/native	1 = 1	2 = 2	3 = 3	4 = 4	5 = 5		
Pronunciation/articulation							
Intonation							
Stress/rhythm							
Speed							
Repetitions/corrections							
Pauses							
Other							
Other							
If you want to be informed on the outcomes of this survey and the thesis, p...							
If you have any final remarks on this survey, in terms of contents or aspec...							

Survey answers (p. 54-56)

Respondent 1	Respondent 2	Respondent 3	Respondent 4	Respondent 5	Respondent 6	Respondent 7
2	2	1	2	1	2	1
31	44	23	32	28	44	27
4	6	5	5	5	6	5
Hoorn, the Netherlands	*	Vadsø, Finnmark, Norway	Cork, Ireland	Opmeer, Noord-Holland, The Netherlands	Eindhoven	winschoten
2	2	2	1	2	2	2
3	5	5	5	4	4	4
2	2	2	2	2	1	2
3		1	4	2	3	
1		1	1	1	1	
0		1	0	1	1	
1		1	0	0	0	
0		0	0	0	1	
0		0	0	0	0	
1		0	0	0	1	
0		1	0	1	0	
		omitted words		grammar		
1		1	3	3	2	
1		1	1	1	1	
0		1	0	0	0	
0		1	0	0	0	
0		1	0	1	1	
0		0	1	0	0	
1		1	0	1	1	
0		1	0	0	0	
		fortis/lenis issues				
2		1	3	3	0	
0		1	1	1	0	
0		1	0	0	0	

1		1	0	0	0	
0		1	1	1	0	
1		0	1	0	0	
1		1	0	0	0	
0		1	0	0	0	
		Fortis/lenis issues				
3		3	4	4	0	
1		1	1	1	0	
1		1	1	1	0	
0		1	0	1	0	
0		1	0	0	0	
0		0	0	0	0	
1		0	0	0	0	
0		0	0	0	0	
2		2	3	3	0	
1		1	1	1	0	
1		1	0	0	0	
1		1	0	0	0	
0		0	0	0	0	
1		0	1	1	0	
0		1	1	0	0	
0		0	0	0	0	
1		2	3	2		
1		1	1	1		
1		1	0	1		
1		0	0	1		
1		1	0	1		
1		0	0	0		
1		1	1	1		
0		0	0	0		
3		3	3	3		
1		1	0	1		
0		1	0	0		
1		1	1	0		
0		1	0	0		
1		0	0	1		
1		0	1	1		

0		0	0	0		
3		3	4	4		
0		1	0	1		
1		0	0	1		
0		1	1	0		
0		1	0	1		
0		0	0	0		
1		0	0	0		
0		0	0	0		
kamaraadski @yahoo.co m						
Nice research! Now I would like to hear a native speaker speak up!						