UNIVERSITY OF AMSTERDAM

Do Dutchies schwa a lot?

The possible influence of Dutch pronunciation on the perception of spoken English.

Master's Thesis

Amsterdam, June 2021

Roos (Alex) Jansen (13415115)

Supervisor

Mw. Dr. Silke Hamann

Second Reader

Dr. B.M. van 't Veer

Abstract

Schwa epenthesis is a linguistic process which is prevalent in the Dutch language. Even though its use is inconsistent, schwa epenthesis can easily be found in the output of many speakers of Dutch. In the English language, however, schwa epenthesis is far less prevalent, since it seems to be entirely absent in both American and British English. Nevertheless, a limited form of schwa epenthesis does occur in less-widely spoken varieties of English such as Scottish English and Irish English. Drawing on the idea of language transfer, this research therefore examines the perception of schwa epenthesis by native Dutch speakers in both Dutch and British English to language transfer of schwa epenthesis from Dutch to British English is perceived as sounding natural. To examine this, this research focuses around three research questions. The first of these is whether native speakers of Dutch can perceive schwa epenthesis in Dutch. The second question is whether speakers of Dutch can perceive schwa epenthesis in spoken English, and if they do, the third question is whether they consider this as sounding natural.

Acknowledgements

My master's thesis is the pièce de résistance of a long journey as a student. This past academic year has been tough, with all its studying-at-home and no physical contact with other students. Yet I was still able to do it, passing all the courses while also enjoying the final stop in my career as a student. This journey I described started long ago at the Dutch VMBO-T, where I actually visualised myself studying at a university, something pretty much impossible for students of VMBO since you have to work yourself all the way up. However, I have managed this by showing dedication, discipline and with some help of my wonderful family, friends and teachers.

This thesis could not have been written without the support of Dr. Silke Hamann, an amazing lecturer from the University of Amsterdam who provided me with endless waves of feedback which helped me along the way and was able to cope with my very messy brain. Besides Silke, Dirk Jan Vet also deserves a lot of credit for setting up the online experiment.

Throughout all these years as a student I have met so many amazing people who supported me all the way through to the end. Providing me with the needed support and feedback, but also giving me the energy to keep on going. I would like to mention some friends specifically, one of them being Sten, someone who followed in my footsteps by also going to university to study English Language and Culture after a draining experience on the Dutch university of applied sciences. Sten has provided me with laughs, beer, support and loads of feedback over the years. He is one of the kindest and most amazing friends one could wish for. Like Sten, Dennis and Tim were the best source of fun, especially when I needed it most. One final friend I would like to mention and profoundly thank is the one whom I have zinged with, Ilse. She provided me with a stepping stool to go to the next level. With her endless love and always appreciated support I was able to pull off this thesis. Thanks to her my future seems more rose-coloured than ever before.

Table of contents

1. INTRODUCTION

Human speech is a variable and complicated affair. This emanates when analysing the output of someone's speech since such an analysis illustrates the many different processes that take place while producing said output. Each process can have different causes behind its presence. For example, processes like voicing may make language easier to perceive for listeners, whereas others like deletion may make speech easier to produce. One such process which often appears in human speech is epenthesis, in which one or more sounds are added to a word. This process could, as already set out above, make speech easier to both produce and perceive. The Dutch language is well-known for its common usage of epenthesis, especially of the epenthetic schwa in which a schwa-sound is inserted into a specific consonantal cluster, consisting of a liquid consonant [l] or, independent of the realisation, [r], and a non-dental consonant being [b], [p], [m], [f], [v], [n], [l], [x] or [k] (Trommelen, 1984, p. 77; 1993, p. 175; Booij, 1995, p. 127). In Dutch, there are a plethora of examples which contain schwa epenthesis (SE for short). Therefore, overview (1) illustrates SE by providing examples of the two different types of SE which are discussed in Warner et al. (2001, p. 388). The first type, (1a), contains words in which a schwa is inserted in the final syllable, whereas the second type, (1b), contains words in which a schwa is inserted in the penultimate syllable of the word. Although the process is quite common, and many examples can be found, it should be noted that not all speakers of Dutch apply this process to the same extent.

(1) *Examples of two different types of schwa epenthesis in Dutch by Warner et al. (2001, p. 388)*

a)	melk	/mɛlk/	[mɛlk] ~ [mɛlək]	'milk'
	wilg	/ʋɪlx/	[ʋɪlx] ~ [ʋɪləx]	'willow'
	hulp	/hʏlp/	[hʏlp] ~ [hʏləp]	'help'
	berg	/bɛrx/	[bɛrx] ~ [bɛrəx]	'mountain'
	korf	/kɔrf/	[kɔrf] ~ [kɔrəf]	'basket'
b)	filmer	/fɪlmər/	[fɪlmər] ~ [fɪləmər]	'cameraman'
	ergens	/ɛrxəns/	[ɛrɣəns] ~ [ɛrəɣəns]	'somewhere'

Multiple accounts exist which attempt to justify the process of SE. One of these is a phonetic account, which tries to explain the process by means of the articulatory systems and suggests that SE exists as some form of compensation for the amount of energy and effort it takes to produce the consonantal clusters. Another account, the phonological tone, justifies the existence of SE by means of the structure of syllables, because SE makes words conform with the universal syllable structure of consonant-vowel. Alternatively, Element Theory, a different phonological account, suggests that

SE exists to make the consonants more distinguishable from each other (Backley, 2011, p. 37-38). The different accounts mentioned are discussed in more detail in section 2.

While the process of SE is common in Dutch, it is rather uncommon in the English language. The predominant varieties, British English (BE) and American English (AE), do not display any forms of SE. However, there are two less prevalent varieties of English which do show SE in their output, namely Scottish English (SSE) and Irish English (IrE). Hickey (2004, p. 83) mentions this process in his *A Sound Atlas of Irish English*, where he comments on how in /lm/ clusters, and less often in clusters of /rm/ and /rn/, schwa-insertion can take place. This process of SE in SSE and IrE is described in more detail with examples in section 2.3.

Seeing that SE occurs in some varieties of English sparks interest, since SE would normally be considered to sound foreign to speakers of AE and BE under language normative circumstances. This research has three different objectives. The first objective is to explore the sensitivity of native speakers of Dutch with regards to SE in Dutch. It is expected that the participants will not perceive the difference between sentences containing SE and those which do not. This expectation is based on the fact that SE is a prevalent process in Dutch, which can be assumed to be harder to distinguish than processes which are not as prevalent. The second objective is to examine whether native speakers of Dutch are sensitive to SE in English. It is again expected that participants are unable to perceive the difference between sentences containing SE and those which do not, since there may be a possible transfer of SE from their native language. The final objective is to evaluate the perception of SE in English. Here it is expected that the Dutch participants will consider SE as sounding natural in English due to the same possible transfer mentioned before.

2. BACKGROUND

2.1 On the workings of schwa-epenthesis

SE in Dutch is a process which, as described in the introduction, can occur in certain contexts, albeit irregularly, depending on the speaker. Consequently, different theories exist which try to account for the mechanisms of SE. Kloots et al. (2009, p. 46) suggests that three approaches can account for the process, namely the articulatory approach, the phonological approach and the psycholinguistic approach.

The articulatory approach, which is a phonetic approach, tries to account for the SE process by looking into the articulations which are needed to produce the consonantal clusters in which SE occurs. Although there is a lack of proper research and further information on the production of complex Dutch consonantal clusters according to Kloots (2009), there is still the assumption that clusters like /lk/ and /rf/ are harder to pronounce compared to other clusters like /kl/. The assumption is based on the complexity of these clusters since they require more energy and more complex tongue

movements than the other clusters (Kloots, 2009: 46). The schwa which is inserted makes it easier to pronounce these clusters, creating pronunciations like [me.lək] and [we.rək]. Yet, assuming that SE can be accounted for by solely looking at the articulatory effort of the speaker does not hold up in the face of closer consideration. Not only is SE an inconsistent process, since it is not applied by all speakers to the same degree, but it also does not appear in the prominent varieties of English, being BE and AE. Therefore, if SE was used to relieve the articulatory effort of the speaker alone it should be present in all languages. In order to verify the assumptions made by Kloots (2009), further research would be necessary considering they do not provide any further details regarding the articulatory approach.

The second approach, the phonological one, tries to account for the inserted schwa by means of the syllable structure of the word. Dutch words like *melk*, *korf*, and *filmer* are, in terms of consonant-vowel structure, inefficient, since they do not follow the consonant-vowel (CV) structure. To make the words more efficient, a schwa is inserted which creates a more "desirable" structure in the syllables according to Vennemann (1988). Even though the second syllable of the word is not in line with CV structure, it could be argued that the cluster of consonants still comes closer to the CV structure since the schwa is inserted. In order to create this second syllable, in which the schwa is found, a syllable break is used. In this second syllable the coda /l/ or /r/ are assigned to the onset (Sebregts, 2014, p. 236). CV phonology is a theory which assumes that every language contains CV sequences. Words like *melk* and *werk* could fit better to some degree into such a CV sequence if they are pronounced with SE. As mentioned before, if SE takes place, an additional syllable is created in the process (Jakobson & Halle, 1971, pp. 31-32, 51; Clements & Keyser, 1983, p. 28). Yet, this approach demands "a high price", since this additional syllable which is created is considered closed and has a schwa in its core (Kloots, 2009, p. 46; Van Oostendorp 2000, p. 155).

The assumption that the CV sequences can be solely used for all languages can be invalidated by considering examples which contain other syllabic structures which are commonly found in many languages. One such example would be onset clusters like in the Dutch word *krant*, since the first two consonants are clearly pronounced without a vowel in between. However, this counterargument is diffused when taking Element Theory (ET) into consideration while analysing syllabic structures, since this theory affirms the former claim about CV sequences. ET, in short, assumes that language is made up of smaller elements, which are compared to phonological features and assumed to be monovalent rather than binary (Backley, 2011, p. 10). Another assumption made by ET is that vowels can be weak, categorising vowels as such when they appear in unstressed syllables, which also accounts for schwa. ET can therefore also account for SE, since schwa is still considered to be a phonological object which can be used in the nucleus position to make two adjacent consonants more distinguishable from each other (Backley, 2011, p. 37-38). Words like *melk* and *kerk*, like the

mentioned phonetical account already suggests, are harder to pronounce because they require more energy than words like *woord*. This need of more articulatory energy may result in the /r/ and /l/ being harder to distinguish for the speaker. As a result, an unstressed schwa is inserted in the nucleus position of the syllable to make the cluster of consonants more distinguishable. When looking at onset clusters, SE does not take place according to ET, due to the consonants already being more distinguished from each other.

The account by ET, which suggests that the schwa is inserted to make the consonants more distinguishable, can also be combined with the account provided by Articulatory Phonology (AP). AP is a framework that claims to unify different aspects of phonetics and phonology. However, Sebregts (2014) criticises how AP for actually being non-phonological because it mainly covers phonetical aspects (p. 238). AP claims that SE should be called schwa-intrusion, because it is an intrusive gesture. This intrusive gesture happens due to natural movements of the tongue (Sebregts, 2014, p. 238). It could be argued that, when AP and ET are combined, these theories could provide a combined account for SE. This account could then propose the argument that the schwa naturally intrudes in the consonantal cluster in order to make the cluster easier to distinguish.

The third and final approach suggested by Kloots (2009), the psycholinguistic approach, proposes the view that SE is a process that can be utilised to make language easier and quicker to process for the listener (p. 47). Moreover, this approach could be linked to prosody, or the rhythm of language, since speakers tend to adhere to a rhythm which they try to maintain throughout the sentence. Findings by Kuijpers & Van Donselaar (1998) indicate that when speakers try to maintain a trochaic rhythm, SE was used as a tool for preserving the rhythm, since the second syllable of a word with SE is unstressed (p. 100).

All the approaches listed above appear to be one-sided. To avoid these one-sided views, combinations of the approaches could be suggested instead, like Articulatory Phonology, which may make the process more logical. However, due to the limited scope of this project with regards to workings of SE, a separate study would be needed in order to go into more detail in relation to the reasonings behind SE and to attempt to synthesise the three accounts.

2.2 Users of Schwa-epenthesis in Dutch

Besides the research on SE's workings, there has also been some in-depth research on the Dutch speakers who apply SE. The process of SE seems to be controversial: while there does seem to be a general rule for the application of SE, not everyone does apply it all the time. Multiple accounts suggest that region is the main factor in determining the differing usages, because in Flanders (the Dutch speaking part of Belgium) SE seems to be more prominent than in the western cities of the Netherlands (Sebregts, 2014, p. 242; Kloots et al, 2009, p. 59). In the Netherlands, SE seems to be

more prominent in the cities which are not situated in the province of South Holland. Kloots et al. (2009, p. 59), however, concluded that only age seemed to have a statistically significant influence on the usage of schwa, since their older participants had the tendency to apply SE more frequently than the younger participants. On the other hand, sex and region did not seem to have a significant influence on the usage of SE.

2.3 Schwa-epenthesis in English

Conversely, SE is a less prominent feature in English than it is in Dutch. In English the most well-known varieties, being AE and BE, do not have any SE in their output, as previously stated. Considering that these varieties are more prominent in the world compared to SSE and IrE, speakers of Dutch likely have no real exposure to SE in English. Yet, it can be argued that native speakers of Dutch who have been in contact with speakers of IrE and SSE may have had some degree of exposure to SE in English. As alluded to in the introduction, these varieties have a similar form of epenthesis to Dutch. Albeit less common and in, somewhat, different circumstances, SE is applied in both IrE and SSE. Examples of SE in IrE which are applicable to both varieties of English are *film* [fɪləm] and *farm* [farəm] (Sell, 2012, p. 49).

Further examples of SE in IrE are harder to come by, since SE seems to be far less prevalent. The examples given by Sell appear to cover the gist of SE in IrE. One more example of SE in IrE can be found in the word *seilg* meaning *hunt* because it can be pronounced as [ʃɛləg] (McCullough, 2017, p. 2).

The examples *film* and *farm* show that SE can be applied in clusters like /lm/ and /rm/, to which Maguire (2017, p. 164) adds that SE can also often be found in the clusters /rl/ and /rn/ in SSE. Compared to Dutch, in which SE can occur in more variable clusters, the contexts in which SE can occur in SSE and IrE seem relatively limited. Apart from these clusters in which SE can occur relatively often, Maguire also adds that in clusters like /rd/, /rk/, /rt/ and /rv/ SE can sometimes take place in SSE, using the words *bird*, *part* and *dark* as examples (2017, p. 161-164).

As of the origins for SE in English, they can be traced back to Old English, which contains very similar clusters in which a connecting vowel is used (Campbell, 1959, p. 150-151). Maguire argues that the SE found in IrE and SSE can be traced back to Old English but was lost in other varieties like BE and AE (2018, p. 492).

2.4 On the perception of language and how languages influence each other

Whereas the previous sections mainly focused on the working of SE in Dutch, SSE and IrE, this section will analyse the possible transfer of features from one language to another and the perception of native speakers of foreign sounding speech. Since the native language of a speaker can influence

the possible output of a secondary language, this could mean that prominent features of languages, like Dutch SE, may be transferred to another language. Even though no specific research has been conducted yet on this matter with regards to Dutch SE, Broselow (1993, p. 74) does argue that the influence of certain features, like epenthesis, which are part of a native language, can play a direct role in influencing the possible output of an acquired secondary language. Although Broselow's research mainly focused on the output of Arabic speakers with regard to epenthesis, the same observation could be applied to Dutch SE, since the examples presented by Broselow are arguably similar to those of Dutch SE. (2) displays a small sample of epenthesis errors made by non-native English speakers from Egypt. The underlying cause for these types of epenthesis errors, stems from the native language of these speakers: Egyptian. In (2), English words like *floor* and *slide* can be seen to be problematic for native Egyptian speakers, since the initial cluster of consonants is considered foreign for their native language, and they consequently try to compensate for this foreign structure by inserting an extra epenthetic vowel. Therefore, as the result of a language transfer, these errors were made. This may show that a possible transfer of SE may occur when native speakers of Dutch, who were not trained to speak English, start learning and speaking English.

(2) *'Typical' errors in English made by Egyptian learners (Broselow, 1993, p.74)*

a. 'floor' [fɪlɔː]
b. 'plastic' [bɪlæstɪk]
c. 'three' [θɪriː]
d. 'translate' [tɪrænsɪlət]
e. 'slide' [sɪlaɪd]
f. 'fred' [fɪrɛd]

Having non-native sounding elements in the speech stream may result in a foreign sounding accent, like the Egyptian student examples in (2) show. In addition, having a foreign accent may come with its own set of issues. According to Moyer (2013, p.11), the definition of accent is rather subjective since each person has its own view on language. Yet, having this non-native quality applied to speech may, as Moyer states, result in a lack of fluency, in misunderstandings and in language that is overall more difficult to understand (2013, p. 11). Moyer also adds that "as social beings, we inevitably size up one another according to perceived similarity–difference. Thus, it is no real surprise that listeners rate their own accents positively, while foreign accents tend to be viewed negatively by comparison" (2013, p. 14). This could therefore result in speakers with foreign sounding accents being taken less seriously, or even worse, not being understood at all.

3. PRESENT STUDY

The majority of the studies examined above have focused on SE in Dutch, SSE and IrE. Yet, in these studies a consideration of the perception of SE in BE and AE appears to be lacking. In an attempt to fill this gap in the research, this study compares the perception of SE by native Dutch speakers in both Dutch and BE. Considering Broselow's (1993) observation that the transfer of features of the native language to the second language is possible, speakers of Dutch may regard SE in BE and AE as sounding natural, since in Dutch SE is perceived as natural and the listener's own pronunciation can influence their perception of a speaker (Moyer, 2013). To test this hypothesis, this study answers three different research questions which will eventually be considered together. The first of which asks whether native speakers of Dutch are aware of SE in excerpts of spoken Dutch. This is tested by letting the participants indicate whether they hear a difference between two spoken excerpts of Dutch. The second question asks whether native speakers of Dutch can perceive SE in Spoken English. The methods used to answer this question are similar to the first question's method. The final question of this research is how SE in English is perceived by the native Dutch speakers. This is tested by letting native speakers of Dutch listen to excerpts of spoken English and asking them to indicate whether these excerpts sound natural or not.

4. METHODOLOGY

4.1 Participants

For this experiment, participants were mainly gathered through the internet: by posting invitations on the social media website **facebook.com** and the Dutch forum **budgetgaming.nl**. 20 participants were able to take part in this experiment. All participants were above 18 years old. Besides the minimum age, participants had to indicate that they are native Dutch, that they had no hearing impairments and that they did not grow up in a bilingual environment. The participants were also asked to provide an indication of their exposure to English in a short questionnaire, of which (3) gives an overview of the different options. No further information was gathered from the participants due to privacy concerns.

(3) *The questionnaire which participants had to fill in*

How often are you exposed to spoken native English content? (Think of television, podcasts, radio, school and other sources like the internet)

1. More than once per week
2. Once per week
3. Once or more every two weeks
4. Once or more every month
5. Less than once per month

4.2 Stimuli

All the stimuli were recorded on a MacBook Pro using a HyperX Cloud II Pro Gaming Headset with detachable microphone. This headset was used to ensure that all recordings were of the same quality. The recordings were made using the phonetics computer program Praat (Boersma & Weenink, 2021) and all files were saved in the Waveform Audio File Format (.wav) with a sampling frequency of 44,100 Hz. All of the stimuli were then scaled to have a maximum intensity of 70 dB. The English stimuli were recorded by two young Dutch adults who both studied English Language and Culture and have a British-like accent. The Dutch stimuli were recorded by a native Dutch young adult and an older native Dutch adult. The recordings were cut using Praat.

The Dutch stimuli, as seen in (4a) and (4b), are short utterances in which SE can naturally occur. Short sentences were used to keep the experiment accessible for the participants. Six SE stimuli were used and, based on this amount, 20 filler sentences were created which consisted of three categories: same sentence fillers, assimilation fillers and contraction fillers. All of these fillers differ from the SE utterances, since processes like assimilation and contraction do not involve the process of adding sounds. Examples of the Dutch filler sentences can be seen in (4e) and (4f). The pronunciations of the filler sentences can all occur naturally in the Dutch language. Similarly, the English stimuli make use of SE in corresponding positions, examples of which are provided in examples (4c) and (4d). The 20 filler sentences contain the same types as the Dutch filler sentences, examples of which are found in (4g) and (4h). The complete overview of all the stimuli can be found in appendices A and B.

(4) *Examples of short sentences from the experiment for both Dutch (a, b, e & f) and English (c, d, g & h), all given in orthographic form*

	Stimuli
a	Ik heb m'n nieuwe jurək aan Ik heb m'n nieuwe jurk aan
b	Ik drink graag meləк Ik drink graag melk
c	The grass was eaten by the caləf The grass was eaten by the calf
d	I am going to worək today I am going to work today
e	'T regent Het regent
f	Hijs lief Hij is lief
g	Gimme my hambag Give me my handbag
h	Tem bikes in a row Ten bikes in a row

4.3 Procedure

The experiment, which was also approved by the ethics committee of the University of Amsterdam's FGW, was built using the software *ED* (Experiment Designer) programmed by Dirk Jan Vet from the University of Amsterdam (2021). The experiment was hosted on the University website, so that participants could participate in the experiment after receiving a subject number. Each of the participants had to perform four separate tasks to complete the experiment. In the first task, the participant had to indicate whether a difference could be heard between two Dutch excerpts. The second task required the participant to specify whether a single Dutch excerpt sounded natural or not, this task was used as preparation for the fourth task. Therefore, the results of the second task were not taken into consideration. The third and fourth tasks copied the format of the first two tasks, but the excerpts were in English instead of Dutch. Before starting the experiment, the participants also had to specify that they were non-bilingual, did not have any problems with their hearing, were native Dutch and above the age of 18. If one of these conditions was not met, the participant could not join. Participants were also informed that they could stop with the experiment at any given time, in line with the guidelines of the ethics committee.

4.4 Data analysis

After the participant finished the experiment, the results, which include the individual scores of the tasks, were put in a data sheet in which the means and standard deviations were automatically calculated. For each task, the participant could obtain a number of points. For tasks 1 and 3, in which the participant was asked to indicate whether the two excerpts heard sounded similar or not, participants received one point for every excerpt in which SE was present if their answer was "sounds different", giving the participant a maximum six points which could be obtained per task. For task 4, in which the participant had to indicate whether the heard excerpt sounded natural or not, participants received one point for every excerpt in which SE was present if their answer was "sounds natural", allowing the participant to get a maximum of six points. None of the filler sentences were taken into account for any of the tasks. All of the individual results have been recorded in three different appendices to create a clear overview. Appendix C contains the results for task 1 and appendices E and F contain the results for tasks 3 and 4.

5. RESULTS

This section first provides an overview of the means and standard deviations for all three tasks in table 1. The participants' individual results for each task can be found in the previously mentioned appendices C, E and F.

Table 1

An overview of the outcomes of the three tasks, for each task the mean and standard deviation are displayed

	Task 1 (Dutch)	Task 3 (English)	Task 4 (English)
Mean	6	6	6
Standard deviation	0	0	0

As can be seen in table 1, each task has identical outcomes. As described in section 4.3, Task 2 was used to allow the participants to get used to the format used in Task 4, therefore the results are not displayed here. For all three tasks, participants were able to score perfect scores.

6. DISCUSSION

This experiment was set up to explore schwa-epenthesis in the Dutch and English language. The experiment consisted of four tasks, three were used to answer the three research questions which were presented in sections 1 and 3.

The first research question, namely: “can native speakers of Dutch distinguish schwa-epenthesis in their native language”, can be answered by the results of task 1. The hypothesis for this research question was that native speakers of Dutch are unable to perceive SE when comparing Dutch sentences that do and do not display SE. However, the results of the first task show the opposite of what was expected, since all participants were able to successfully perceive the difference between two sentences that differed only by one of them containing SE.

The second research question which this thesis attempted to answer was “can native speakers of Dutch distinguish schwa-epenthesis in the English language”. The hypothesis linked to this question expected the participants to be unable to perceive the difference between BE sentences when comparing SE stimuli to non-SE stimuli. Like the first research question, the results of task 3 show that the participants were able to successfully perceive the differences between sentences, thus opposing the hypothesis.

The final research question, which is “do native speakers of Dutch perceive SE in English as natural-sounding or foreign”, can be answered by the results of task 4. The expected outcome was that the participants would have perceived BE sentences containing SE as natural, yet the results of task 4 show that all the participants indicated that stimuli which featured SE in English were seen as unnatural.

The answers provided above do provide an overview of the perception of SE in both Dutch and English. There seems to be a correspondence between the results of tasks 1 and 3 and the exposure to English of the participants. In appendix G, the results of the exposure question are displayed, which indicate that all the participants are very regularly exposed to native English content, which is at least once every week. This high exposure level, combined with the scores obtained in the tasks, suggests that a correlation may exist between exposure level and language proficiency. Yet, it would be premature to conclude this solely based on the data provided by this study. However, this correlation has been indicated before by Flege (1991) and Flege (2003). The results of task 4 seem to correlate with the statement of Moyer (2013), since SE is something which is considered foreign or unnatural in British English and American English.

Although this experiment may have provided answers to the posed research questions, it did have several limitations. One of these limitations was the ongoing pandemic. This forced the processes required for the thesis to be carried out from home. All of the recordings made for the experiment have been made with non-professional equipment in a non-isolated room which may have resulted in background noise in the recordings. Besides the possible noise included in the background of the recordings, other factors such as the place in which the experiment was carried out or the type of headphones which were used by the participant could have been a source of possible interference. Considering that each headphone differs in quality, participants could have missed certain details and

started guessing answers. All of the participants were gathered through the internet and had the freedom to partake in the experiment at their own leisure at home or in a different place on their own computer instead of having to come to a building where they use a preselected headset for the audio, and the exact same computer. These types of logistical issues can easily be resolved once the pandemic is over and when it is safe to have physical contact. Another possible issue with gathering participants through the internet could be that the experiment mainly attracted participants who were interested in language and were therefore able to perceive the differences more easily.

Another limitation of this experiment was the exposure-level to English of the participants. Almost all of the participants have indicated that they have had very regular exposure to the English language of at least once per week. This made the group of participants rather narrow with regard to the diversity of exposure. A more diverse group of participants with different amounts of exposure may present different results. This experiment also did not account for any exposure to Irish English and Scottish English, two varieties of English in which SE can occur in limited circumstances. This may influence the way native speakers of Dutch consider SE in English. This also intertwines with the fact that the English recordings were made by non-native speakers of the language, who had to insert a schwa in, for them, unnatural positions. This could be resolved by hiring native speakers of IrE and SSE, who can more naturally insert schwas into English.

Finally, the contents of the experiment itself could also be improved upon, since the stimuli used for tasks 1 and 3 did not contain any fillers in which SE could possibly occur. A more diverse set of filler sentences could already result in an improvement of the quality of the stimuli. In the questionnaire, which the participants had to fill in, they were asked to give a single indication of their exposure to the English language. This single indication does not provide a sufficient view into the participant's contact with English because it is measured in a rather unprecise manner. Miatto (2018) provides a more fine-grained indication of the participant's exposure to, and proficiency in, other non-native languages by calculating one score from different questions (pp. 42-48).

7. CONCLUSION

Even though the results of the experiment may seem one-sided, there is still much room for further expansion in the field of schwa-epenthesis. This experiment's focus was on the perception of SE in Dutch and English, and the results show that speakers of Dutch are aware that SE is not a process which occurs in the English language. A follow-up experiment could investigate the opinions of listeners when being exposed to SE in English in more detail, for which a corresponding research question could be "what is the opinion on SE of a native Dutch speaker who is exposed to SE in English?" Moyer (2013) believes that having a native-like accent can influence the listener's

perception of the speaker, which could suggest a possible hypothesis in which more native sounding speech is considered to be "better", whereas foreign sounding speech is taken less seriously.

This thesis' main objective was to examine the reception of foreign sounding language compared to native sounding language. As such it did not consider the production of vowels, which can highly differ between languages. Comparing vowels between languages may result in slight differences in how these vowels are produced, giving them different qualities. Thus, a follow-up study could look into a corpus-based analysis, where the quality of the epenthetic schwa is compared between Dutch, IrE and SSE. Exploring this topic will help to understand the differences between languages and especially how the SE differs amongst them. Moreover, such a follow-up study would also indicate how the quality of the schwa may influence the perception of listeners.

Another question which arose while writing this thesis was "does the quantity of SE differ between formal language and informal language?" This question has not been properly explored yet and can, through a suitable corpus, be answered. Moreover, does the influence of the level of formality on the quantity of SE differ between languages like Dutch, SSE, IrE and the historical renditions of English? And finally, do the contexts in which the schwa is inserted differ? Schwa-epenthesis does, as these questions illustrate, indeed make for an interesting topic with a bright future.

REFERENCES

Backley, P. (2011). *An Introduction to Element Theory*. Edinburgh University Press.

Boersma: & Weenink, D. (2021). Praat: doing phonetics by computer [Computer program]. Version 6.1.40, retrieved 27th April 2021 from http://www.praat.org/

Booij, G. (1995) *The phonology of Dutch*. Clarendon Press.

Broselow, E. (1993). Transfer and universals in second language epenthesis. In S. M. Gass & L. Selinker (Eds.), *Language transfer in language learning* (pp. 71–86). John Benjamins Publishing Company.

Campbell, A. (1959). *Old english grammar*. Oxford University Press.

Clements, G. & Keyser, S. (1983). *CV Phonology: A generative theory of the syllable*. The MIT Press.

Flege, J.E. (1991). Age of learning affects the authenticity of voice-onset time (VOT) in stop consonants produced in a second language. *The Journal of the acoustical society of America, 89*(1), 395-411.

Flege, J.E. (2003). Assessing constraints on second-language segmental production and perception. In A.S. Meyer & N.O. Schiller (Eds.), *Phonetics and phonology in language comprehension and production: Differences and similarities*. De Gruyter Mouton.

Hickey, R. (2004). *A sound atlas of Irish English*. Mouton de Gruyter.

Jakobson, R. & Halle, M. (1971). *Fundamentals of language* (2nd ed.). Mouton de Gruyter.

Kloots, H., Gillis S. & Verhoeven J. (2009) Merk toch hoe sterk. Sjwa-insertie in spontaan gesproken Standaardnederlands. *Nederlandse Taalkunde, 14*(1), 45–65.

Kuijpers, C. & Donselaar, van, W. (1998). The influence of rhythmic context on schwa epenthesis and schwa deletion in Dutch. *Language and Speech, 41*(1), 87–108.

Maguire, W. (2017). Epenthesis in liquid+consonant clusters in Scots. In J. Cruickshank & R. McColl Millar (Eds.), *Before the storm: Papers from the forum for research on the languages of Scotland and Ulster triennial meeting, Ayr 2015* (pp. 156–82). Publications of the Forum for Research on the Languages of Scotland and Ulster.

Maguire, W. (2018) The origins of epenthesis in liquid+sonorant clusters in Mid-Ulster English. *Transactions of the Philological Society, 116*(3), 484–508.

McCullough, K. (2017) The value of Irish schwa: An acoustic analysis of epenthetic vowels. *Kansas Working Papers in Linguistics*, *38*(1), 1–11. https://doi.org/10.17161/1808.26632

Miatto V. (2018). *Self-reported L2 input predicts phonetic variation in the adaptation of English final consonants into Italian* [unpublished master's thesis]. University of Amsterdam.

Moyer, A. (2013). *Foreign accent: The phenomenon of non-native speech*. Cambridge University Press.

Oostendorp, M. van (2000). *Phonological projection. A theory of feature content and prosodic structure*. Mouton de Gruyter.

Sebregts, K. (2015). *The sociophonetics and phonology of Dutch r* [doctoral dissertation, University of Utrecht]. Lot Publications.

Sell, K. (2012). [ˈfiləm] and [ˈfarəm]? Sociolinguistic findings on schwa epenthesis in Galway English. In B. Migge & M. Ní Chiosáin (Eds.), *New perspectives on Irish English* (pp. 47–66). John Benjamins Publishing Company.

Trommelen, M. (1984) *The syllable in dutch*. Foris Publications.

Trommelen, M. (1993) Lexical word-processes in Dutch. *The Linguistic Review, 10*(2), 161–184.

Vennemann, T. (1988). *Preference laws for syllable structure and the explanation of sound change*. Mouton de Gruyter.

Vet, D.J. (2021) ED — Experiment designer [Computer program]. Beta version 1.32, retrieved 27th April 2021 from https://www.fon.hum.uva.nl/dirk/ed.php

Warner, N., Jongman, A., & Mücke, D. (2001) The phonological status of Dutch epenthetic schwa. *Phonology, 18*(3), 387–420. https://doi.org/10.1017/S0952675701004213.

APPENDIX A

An overview of all the Dutch stimuli which were used

Stimulus	Schwa-epenthesis	Filler
1	Ik heb m'n nieuwe jurək aan Ik heb m'n nieuwe jurk aan	'T regent Het regent
2	Ik drink graag melək Ik drink graag melk	Hijs lief Hij is lief
3	Ik ga naar werək Ik ga naar Werk	Mark zijn pen Mark zijn pen
4	De kerək is mooi De kerk is mooi	Tis interssant Het is interessant
5	Deləft is leuk Delft is leuk	Das gek Dat is gek
6	Dat kaləfje is mooi Dat kalfje is mooi	Lindas telefoon Linda haar telefoon
7		Zij is gek op hem Zij is gek op hem
8		Ik ga naar mijn huis Ik ga naar mijn huis
9		Dat is mijn boek Dat is mijn boek
10		Ze houdt van me Ze houdt van me
11		Kan je dit leren Kan je dit leren
12		Is die van mij? Is die van mij?
13		Kan jij dat opsoeken? Kan jij dat opzoeken?
14		We gaan die plek obdoeken We gaan die plek opdoeken
15		Hep jij dat gedaan? Heb jij dat gedaan?
16		Ik heb hier een zagdoek Ik heb hier een zakdoek
17		Ik kan snel impakken Ik kan snel inpakken
18		Hij is naar het poskantoor Hij is naar het postkantoor
19		Dit is de opset voor vandaag Dit is de opzet voor vandaag
20		Heb jij een nachkastje? Heb jij een nachtkastje?

APPENDIX B

An overview of all the English stimuli which were used

Stimuli	Schwa-epenthesis	Filler
1	The grass was eaten by the caləf The grass was eaten by the calf	Gimme my hambag Give me my handbag
2	I am going to worək today I am going to work today	Tem bikes in a row Ten bikes in a row
3	I like milək I like milk	I would like a samwich I would like a sandwich
4	Marək loves chocolate Mark loves chocolate	On ne house On the house
5	This dress is made of silək This dress is made of silk	What a Hoppot What a Hotpot
6	Are you going to the parək? Are you going to the park?	I tell you Goobye I tell you Goodbye
7		Goonnight to you Goodnight to you
8		I'm busy I am busy
9		Is that Michael his bike? Is that Michael's bike?
10		She's lovely She is lovely
11		We'd like that We would like that
12		Aren't they smart? Are they not smart?
13		He ain't helping He is not helping
14		I like bunnies I like bunnies
15		Is that John? Is that John?
16		I cook every day I cook every day
17		I drink a lot of water I drink a lot of water
18		He's crazy He is crazy
19		Walking is fun Walking is fun
20		That cookie is amazing That cookie is amazing

APPENDIX C

An overview of results for task 1

Participant	jurk vs jurək	melk vs melək	werk vs werək	kerk vs kerək	Delft vs Deləft	kalfje vs kaləfje	Total
1	1	1	1	1	1	1	6
2	1	1	1	1	1	1	6
3	1	1	1	1	1	1	6
4	1	1	1	1	1	1	6
5	1	1	1	1	1	1	6
6	1	1	1	1	1	1	6
9	1	1	1	1	1	1	6
10	1	1	1	1	1	1	6
13	1	1	1	1	1	1	6
17	1	1	1	1	1	1	6
18	1	1	1	1	1	1	6
20	1	1	1	1	1	1	6
25	1	1	1	1	1	1	6
27	1	1	1	1	1	1	6
28	1	1	1	1	1	1	6
29	1	1	1	1	1	1	6
30	1	1	1	1	1	1	6
50	1	1	1	1	1	1	6
51	1	1	1	1	1	1	6
998	1	1	1	1	1	1	6
Mean	1	1	1	1	1	1	6
STD	0	0	0	0	0	0	0

APPENDIX D

An overview of results for task 2

Participant	jurək	meləк	werək	kerək	Deləft	kaləfje	Total
1	1	1	1	1	1	1	6
2	1	1	1	1	1	1	6
3	1	1	1	1	1	1	6
4	1	1	1	1	1	1	6
5	1	1	1	1	1	1	6
6	1	1	1	1	1	1	6
9	1	1	1	1	1	1	6
10	1	1	1	1	1	1	6
13	1	1	1	1	1	1	6
17	1	1	1	1	1	1	6
18	1	1	1	1	1	1	6
20	1	1	1	1	1	1	6
25	1	1	1	1	1	1	6
27	1	1	1	1	1	1	6
28	1	1	1	1	1	1	6
29	1	1	1	1	1	1	6
30	1	1	1	1	1	1	6
50	1	1	1	1	1	1	6
51	1	1	1	1	1	1	6
998	1	1	1	1	1	1	6
Mean	1	1	1	1	1	1	6
STD	0	0	0	0	0	0	0

APPENDIX E

An overview of results for task 3

Participant	calf vs calәf	work vs worәk	milk vs milәk	Mark vs Marәk	silk vs silәk	park vs parәk	total
1	1	1	1	1	1	1	6
2	1	1	1	1	1	1	6
3	1	1	1	1	1	1	6
4	1	1	1	1	1	1	6
5	1	1	1	1	1	1	6
6	1	1	1	1	1	1	6
9	1	1	1	1	1	1	6
10	1	1	1	1	1	1	6
13	1	1	1	1	1	1	6
17	1	1	1	1	1	1	6
18	1	1	1	1	1	1	6
20	1	1	1	1	1	1	6
25	1	1	1	1	1	1	6
27	1	1	1	1	1	1	6
28	1	1	1	1	1	1	6
29	1	1	1	1	1	1	6
30	1	1	1	1	1	1	6
50	1	1	1	1	1	1	6
51	1	1	1	1	1	1	6
998	1	1	1	1	1	1	6
Mean	1	1	1	1	1	1	6
STD	0	0	0	0	0	0	0

APPENDIX F

An overview of results for task 4

Participant	caləf	worək	miləк	Marək	siləк	parək	total
1	1	1	1	1	1	1	6
2	1	1	1	1	1	1	6
3	1	1	1	1	1	1	6
4	1	1	1	1	1	1	6
5	1	1	1	1	1	1	6
6	1	1	1	1	1	1	6
9	1	1	1	1	1	1	6
10	1	1	1	1	1	1	6
13	1	1	1	1	1	1	6
17	1	1	1	1	1	1	6
18	1	1	1	1	1	1	6
20	1	1	1	1	1	1	6
25	1	1	1	1	1	1	6
27	1	1	1	1	1	1	6
28	1	1	1	1	1	1	6
29	1	1	1	1	1	1	6
30	1	1	1	1	1	1	6
50	1	1	1	1	1	1	6
51	1	1	1	1	1	1	6
998	1	1	1	1	1	1	6
Mean	1	1	1	1	1	1	6
STD	0	0	0	0	0	0	0

APPENDIX G

An overview of the indication given by participants on their exposure to spoken English

Participant	English exposure 1 = high exposure, 5 = low exposure
1	1
2	1
3	1
4	1
5	1
6	1
9	1
10	1
13	1
17	1
18	1
20	1
25	1
27	1
28	2
29	1
30	1
50	1
51	1
998	1
Mean	1,052631579
STD	0,229415734