The Sonority Sequencing Principle in the Acquisition of Dutch by Polish Speakers

BA Thesis

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Taal- en Cultuurstudies: Taal en Ontwikkeling

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7-2014

Words: 7959

MLA formatting

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1. Introduction

All languages have syllables and these syllables adhere to rules and principles. Many of these rules and principles are language specific, yet there are principles that are supposedly universal. One of these universal principles is the Sonority Sequencing Principle. In this study, this principle will be discussed in the light of second language acquisition of Polish learners of Dutch. In this paper, the more general factors that cause second language acquisition to be more difficult than first language acquisition will be addressed first. Secondly, the syllable as a constituent will be discussed, followed by information on Dutch syllables and onset clusters as well as information on Polish syllables and onset clusters. After that, the principle on which the experiment is based, the Sonority Sequencing Principle, will be explained. Furthermore, the way the experiment was conducted, designed and executed will be discussed. Finally, the results will be described and discussed and an answer to the research questions will hopefully be provided in the last section of this paper.

1.1 Second language acquisition

1.1.1 Critical Period Hypothesis

While learning a first language seems almost effortless, learning a second language can be infinitely more difficult. There are many factors that make learning a second language difficult. One example of a possible factor causing problems for learners of a second language is age. The Critical Age Hypothesis (CPH) by Lenneberg suggests that language learning is an easy innate process up to a certain age and that once one has passed that age, learning a language becomes significantly more difficult (Saville-Troike 83). Evidence supporting the CPH was provided by the child 'Genie', who was denied linguistic input until she was 13 years old. After being found, efforts were put into teaching her English yet she never fully

acquired the language (Saville-Troike 83). This suggests that acquiring a language fully has already become very difficult at the age of thirteen. Lenneberg speculated that the critical age period does not only hold for first language acquisition but also for second language acquisition (Saville-Troike 83). If so, one must take into account that for many second language learners the critical age period has passed, which suggests that decreased plasticity of the brain will make it difficult to acquire the new properties and rules of a second language (Saville-Troike 82). However, there are problems with this hypothesis. It suggests that there is a stark cut off point for up to what age a language can be learned. It is much more valid to suppose that the ability to learn a new language fades away, rather than to assume that the ability to learn languages is suddenly lost. Learning a language later in life might still be possible, however, attaining a native-like level of proficiency is unlikely.

1.1.2 Transfer

Transfer is another factor complicating second language acquisition. The initial state of second language learners is different from the initial state in first language acquisition. The first language knowledge the learners already have can interfere with second language learning since they can replicate this first language knowledge to a second language (Flege & Davidian 324).

The acquisition of foreign accents seems to increase in difficulty after the critical period has passed (Hopp & Schmid 361). In the acquisition of foreign pronunciations, early age of acquisition is a big factor to its success (Hopp & Schmid 361) but it is not only age that influences the acquisition of accents. The reason for an increased difficulty in acquiring an accent can be caused by the fact that the L1 is already firmly established in the mind and the accent or manner of pronunciation of the L1 is transferred to the L2 (Hopp & Schmidd 362). It is more likely for adults than for children to transfer knowledge from their L1 phonology to

their L2, due to the reason that even though adults have fully developed vocal tracts, which should ease the production of new sounds, they have also mastered their L1 phonology fully. The adult learners can transfer knowledge to their target language from their L1 (Flege & Davidian 326).

According to Saville-Troike, there are two different types of transfer, positive transfer and negative transfer (19). Positive transfer is when an L2 learner uses a rule from their native language and it produces a correct result in the target language. Negative transfer is when the L2 learner transfers a structure to their L2 from their L1 that is not well-formed in their target language (Saville-Troike 19). Transfer is said to be more apparent in the early stages of acquisition than in the later stages of acquisition. The reason for this is presumably the fact that a more knowledgeable L2 learner knows more about the phonotactics of their second language (Versteeg 15).

1.1.3 Markedness

A third factor complicating second language acquisition is markedness. A grammar in an optimality framework does not entail a rule based framework; it is a framework that consists of the ranking of constraints (Broselow 262). The constrains are considered to be universal and the rankings of these constraints are language specific (Levelt & van de Vijver 1). In an optimality theory grammar, the main idea is that unmarked structures are more easily acquired than marked structures and that universally there is a general preference for more unmarked structures (Broselow 261). A language learner first adheres to structural constraints and after more language specific knowledge is attained, the leaner promotes faithfulness constraints over structural constraints making the more marked structure the preferred (Levelt, Schiller & Levelt 238).

In second language acquisition it can be necessary for the learner to re-rank the

constraints of their first language to suit the target language (Broselow 279). During this process, the second language learner sometimes uses simplification techniques, such as deletion or epenthesis to create more unmarked structures, showing the universal preference for more unmarked structures (Broselow 270). According to Carlisle, second language learners have more difficulty learning languages that allow more marked structures than languages in which only unmarked structures are allowed (246).

1.2 Syllables

It has been attested that words consists of syllables and that the syllable is a constituent in its own right (Blevins 207). All languages seem to have rules that apply to the edges of syllables, the onset and the coda (Blevins 210). Additionally, native speakers have intuitions about syllables. In some languages, syllable structures can be complex while in other languages there are only simple syllables. Complex syllables are more marked than simple syllable structures. When a language allows complex onsets and codas, faithfulness constraints outrank structural constraints. When more marked syllable structures are allowed in a language, unmarked structures will also be allowed in that language (Levelt, Schiller & Levelt 238/ Levelt & van de Vijver 4). The CV syllable is considered to be an "absolute universal" and it is present in all languages (Carlisle 2); it is the most unmarked syllable type. In general, when the onset increases in size or when a coda increases in size the structure becomes more marked (Carlisle 3).

The order of acquisition for Dutch syllables was discovered by Levelt, Schiller & Levelt. A group of 12 children were followed longitudinally and from the data gathered Levelt, Schiller & Levelt found the following two orders of acquisition (242):

"CV→CVC→V→VC→ CVCC→VCC→CCV→CCVC→ CCVCC"
CCV→CCVC→CVCC→VCC→

(Levelt, Schiller & Levelt 242)

As shown, simple, unmarked syllables are acquired before complex, marked syllables.

1.2.1 L2 Acquisition of Syllables

So now we have seen three factors that complicate second language acquisition: age, transfer and markedness. Despite these complications, it is not impossible for second language learners to acquire phonotactic knowledge of their target language. In a study by Weber & Cutler, it was discovered that advanced German learners of English used phonotactic knowledge of English and German to spot English words in a sequence. This could demonstrate that two separate phonotactic systems can exist simultaneously, however, it could also be that the two phonotactic systems have merged (Weber & Cutler 603-604).

A study by Trapman & Kager on the acquisition of subset and superset languages predicted that learners of a subset language would have far greater difficulty in their acquisition than learners of a superset language. Learners of a superset language are provided with positive evidence of what is possible in the superset language, yet learners of a subset language are not provided with any evidence of what is not allowed in their target language. A superset language is a language that is freer than a subset language. A subset language is a language in which there is less allowed than superset language and can be seen as consisting of a small part that makes up the superset language.

Trapman & Kager's study dealt with the judgement of nonwords containing legal and illegal onset clusters by learners of a subset language (Russian learners of Dutch) and learners of a superset language (Spanish learners of Dutch). The results of their study showed that, like the Dutch control group in the study, the Russian participants showed sensitivity to the difference between illegal and legal onsets and consonant clusters (Trapman & Kager 208). For this study, it is interesting to consider the fact that Polish is a superset language and Dutch is a subset language. According to the study by Trapman & Kager, it should not be impossible

for Polish second language learners of Dutch to acquire the subset language.

In second language acquisition of syllables, there is a preference by learners for the most unmarked syllable structure. In a study on syllable universals by Carlisle, it is explained that the most unmarked syllable structure is the CV syllable. This syllable, as mentioned earlier, is an absolute universal (Carlisle 3-5). Often, second language learners will simplify marked syllables, creating more unmarked syllable structures by deletion or epenthesis. According to Carlisle, syllables become more marked when the length of the margins increases. A long onset or a long coda is more marked than short onsets and codas (8). The simplification strategies that second language learners use, are often caused by native language transfer (Carlisle 5) and are generally not caused by the universality of the CV (Carlisle 6).

1.3 The Sonority Sequencing Principle

Not all rules concerning syllables are universal, yet in spite of the differences between languages, there is a universal principle that ranks the sounds within a syllable. This principle is called the Sonority Sequencing Principle (SSP) and a version of it has been observed as early as 1904 by Jespersen (Blevins 210). According to Blevins, the Sonority Sequencing Principle can be defined as follows: "Between any member of a syllable and the syllable peak, a sonority rise or plateau must occur." (Blevins 210)**.** This means that in the onset of a syllable, before the peak, sounds of equal sonority or of rising sonority must follow each other. The syllable peak must always be the most sonorous sound in the sequence (Morelli 24). When the second sound in a syllable onset is more sonorous than the first sound in the onset, it is considered to be a sonority rise. A sonority plateau occurs when two sounds of equal sonority follow each other. When the first sound in the onset is more sonorous than the sound that follows it, it is considered to be a sonority fall.

In the past, many different sonority scales have been suggested. According to Morelli, there are very general scales that are proposed to be universal and very specific scales that discriminate between each sound separately and can be considered more language specific (Morelli 6). Selkirk, for example, makes the following distinction: "p, t, k < b, d, g < f, θ< v, z, ð< s < m, n < l < r" (Morelli 6). This specific scale would not hold for Polish. Rubach & Booij mention the following sonority scale:

"Vowels > Liquids > Nasals > Fricatives > Stops" (Rubach & Booij 430)

In this study on second language acquisition by Polish learners of Dutch, the scale used will be based on the scale suggested by Carlisle:

"Vowels > Glides > Liquids > Nasals > Fricatives > Stops" (Carlisle 4)

Vowels are more sonorous than glides and glides are more sonorous than liquids and so on. This should mean that in the onsets of syllables, a glide should not be followed by a plosive since this violates the Sonority Sequencing Principle. To illustrate sonority violations, such as sonority falls and plateaus, Table 1 was designed. In Table 1, sonority rises are indicated with an R, sonority plateaus are indicated with a P and sonority falls are indicated with an F.

	Plosives	Fricatives	Nasals	Liquids	Glides
Plosives	**P**	**R**	**R**	**R**	**R**
Fricatives	**F**	**P**	**R**	**R**	**R**
Nasals	**F**	**F**	**P**	**R**	**R**
Liquids	**F**	**F**	**F**	**P**	**R**
Glides	**F**	**F**	**F**	**F**	**P**

Table 1: Illustrated sonority scale.

1.3.1 Dutch syllables and onset clusters

In Dutch, the following syllable structures are allowed: "CV, VC, V, CVC, CCVC, CCV, CVCC, VCC, and CCVCC" (Levelt, Schiller & Levelt 239). Dutch allows complex onsets and complex codas, so faithfulness constraints have been ranked above structural constraints (Levelt & van de Vijver 4).

Dutch onset clusters are much more limited than Polish onset clusters, which will be discussed in paragraph 1.3.2. Below, a Matrix by Trapman and Kager shows an indexation of possible Dutch onset clusters consisting of 2 consonants.

		plosives						fricatives							nasals		liquids		glides	
		p	t	k	b	d	g	f	s	ʃ	x	v	z	ʒ	m	n	r	l	w	j
plosives	p							*pf*	ps							*pn*	pr	pl	*pw*	*pj*
	t								*ts*	tʃ							tr		tw	tj
	k								*ks*							kn	kr	kl	kw	*kj*
	b																br	bl		*bj*
	d													*dʒ*			dr		dw	*dj*
	g																*gr*	*gl*	*gw*	
fricatives	f															*fn*	fr	fl	*fw*	*fj*
	s	sp	st	sk				*sf*			sx				sm	sn		sl	*sw*	sj
	ʃ	*ʃp*	*ʃt*												*ʃm*	*ʃn*		*ʃl*	*ʃw*	
	x															*xn*	xr	xl		
	v																vr	vl	*vw*	*vj*
	z																		zw	
	ʒ																			
nasals	m																		*mw*	*mj*
	n																		*nw*	*nj*
liquids	r																		*rw*	
	l																		*lw*	*lj*
glides	w																			
	j																			

Matrix 1: Dutch onset cluster matrix (Trapman & Kager 187)

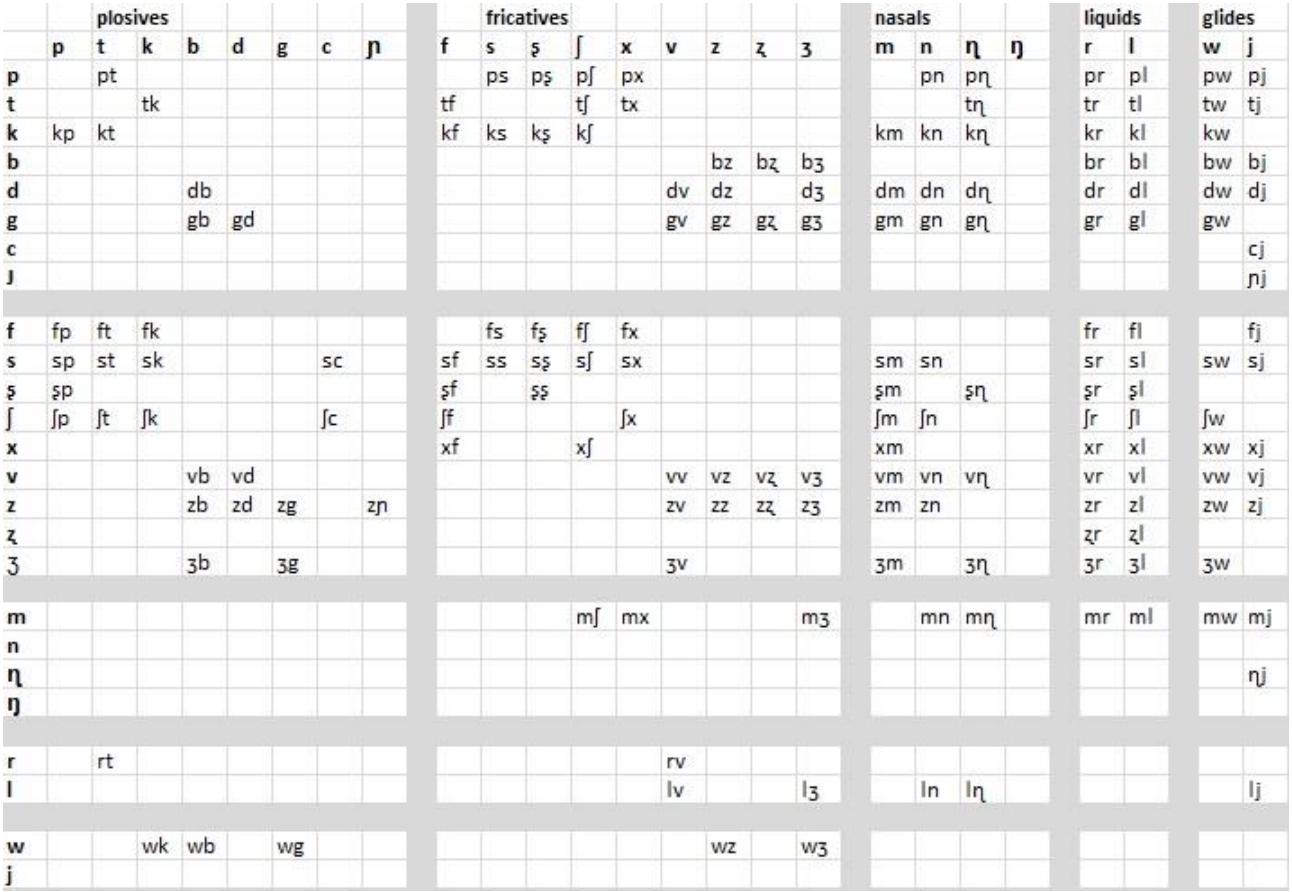
The gaps in Matrix 1 indicate what sound combinations do not occur in Dutch. As can be seen in this Matrix, many sound combinations are absent from the Dutch language. The combinations shown in italics are combinations with a low rate of occurrence in Dutch. There are many combinations that do not occur in Dutch. For example, the combination

nasal+plosive does not occur in Dutch. This sound combination is a sonority fall and sonority falls are illegal in Dutch.

From looking at the Matrix, it could be concluded that Dutch sometimes does allow certain combinations that are generally considered to be sonority falls. However, in Dutch these combinations are considered to be exceptions. In these cases, the sound combination is always an /s/ and another sound. The /s/, in Dutch, can be seen as an extrasyllabic element, which falls outside the domain of the SSP (Trapman & Kager 186). This is also the case for onset clusters of three consonants in Dutch. The onsets containing three consonants only occur in combination with an /s/ (Trommelen 112). The onsets that contain three consonants are /spr/, /spl/, /str/, /sxr/, /skr/, /skʊ/ en /skl/.

1.3.2 Polish syllables and onset clusters

Polish is, compared to Dutch, a much freer language when it comes to sound combinations in onset clusters. To someone who hears Polish for the first time, it might sound like everything is possible in the language. However, there are limitations in Polish. The Polish Matrix that follows is based on an article by Daniel Sledzinski and shows the possible onset clusters of Polish that contain two consonants (70).



		plosives								fricatives							nasals				liquids		glides	
	p	t	k	b	d	g	c	ɲ	f	s	ʂ	ʃ	x	v	z	ʒ	m	n	ɳ	ŋ	r	l	w	j
p		pt								ps	pʂ	pʃ	px					pn	pɳ		pr	pl	pw	pj
t			tk						tf			tʃ	tx						tɳ		tr	tl	tw	tj
k	kp	kt							kf	ks	kʂ	kʃ					km	kn	kɳ		kr	kl	kw	
b															bz	bʒ					br	bl	bw	bj
d				db										dv	dz		dm	dn	dɳ		dr	dl	dw	dj
g				gb	gd									gv	gz	gʒ	gm	gn	gɳ		gr	gl	gw	
c																								cj
ɟ																								ɲj
f	fp	ft	fk							fs	fʂ	fʃ	fx								fr	fl		fj
s	sp	st	sk				sc		sf	ss	sʂ	sʃ	sx				sm	sn			sr	sl	sw	sj
ʂ	ʂp								ʂf		ʂʂ						ʂm		ʂɳ		ʂr	ʂl		
ʃ	ʃp	ʃt	ʃk				ʃc		ʃf				ʃx				ʃm	ʃn			ʃr	ʃl	ʃw	
x									xf			xʃ					xm				xr	xl	xw	xj
v				vb	vd									vv	vz	vʒ	vm	vn	vɳ		vr	vl	vw	vj
z				zb	zd	zg		zɲ						zv	zz	zʒ	zm	zn			zr	zl	zw	zj
ʐ																					ʐr	ʐl		
ʒ				ʒb		ʒg								ʒv			ʒm		ʒɳ		ʒr	ʒl	ʒw	
m												mʃ	mx			mʒ		mn	mɳ		mr	ml	mw	mj
n																								
ɳ																								ɲj
ŋ																								
r		rt												rv										
l														lv		lʒ		ln	lɳ					lj
w			wk	wb		wg									wz									
j																								

Matrix 2: Polish onset cluster matrix (Sledzinski 70).

The Matrix shown above clearly indicates that Polish is much freer in its occurrence of onset clusters and in its consonant combinations than Dutch. Polish allows more sound combinations of different types, for example nasal+fricative, liquid+nasal and plosive+plosive, among which are sonority plateaus and sonority falls.

1.3.3 The SSP in Dutch and Polish

When one looks at the Polish language, it is clear that it does not adhere to the SSP scale that is mentioned in many studies, including this study. However, there are theories on how the SSP does work in Polish. One of these theories is by Rubach & Booij. They discovered that syllabification is rule governed (Rubach & Booij 154) and adheres to the SSP but that there are exceptions to the rules of the SSP. Rubach & Booij suggested a rule that complements the SSP, namely the Obstruent Sequencing Principle (OSP). This principle states that there does

not have to be sonority distance between obstruents (Plosives and Fricatives) in an onset (Rubach & Booij 431) and that Polish adheres to the SSP with the addition of this OSP rule (Rubach & Booij 431). They argue that even though in word onsets and word final clusters Polish occasionally violates the SSP, sonority rules still apply to the Polish language(434).

Cyran proposes another theory in government phonology on Polish onset clusters and how these are structured. Government phonology in general poses that sounds organise themselves according to internal properties of the sounds and according to some "general principles" (Cyran 1). Cyran suggests in his study on Polish that the SSP can also be seen as governing relations between sounds. The more sonorous sound is supposedly governed by the less sonorous sound (Cyran 2). The sonority difference between two (or more) sounds determines what sound is a governor and what sound is a governee (Cyran 2). The relation between these two sounds is a dependency relation, in which the governee is dependent on the governor. Governing principles identify the syllable structure as maximally branching (Cyran 4). Between the consonant clusters of more than two sounds in the onset is an empty nucleus, for the reason that governing relations can only be formed between two consonants and they must have different governing properties (Cyran 4). An example from Cyran's article is the Polish word "tkliwy" (4), in which there is an empty nucleus between /t/ and /k/ and /k/+/l/is a branching onset in which /k/ governs /l/. This theory suggests that long onsets are actually multiple onsets, in which empty nuclei occur between consonants.

This theory does not, however, solve the problem of sonority falls that occur in onsets that contain two consonants. In Polish, these sonority falls occur regularly. In Polish, the first sound in the onset of a syllable can be more sonorous than the second sound in the syllable. This means that Polish does not seem to adhere to the SSP in all cases. Dutch, however, does generally adhere to the SSP. It allows sonority rises and occasionally plateaus, yet sonority falls are considered to be ill-formed in Dutch and do not occur except for the /s/+ other sound

combinations. In these instances, the /s/ is considered to be extrasyllabic (Trapman & Kager 186), which means that these combinations are not really sonority falls. The question then is: Do Polish second language learners of Dutch learn that sonority falls in Dutch are ill-formed?

1.4 Hypotheses and expectations

The factors that complicate second language acquisition as mentioned earlier, such as transfer, can cause all sorts of errors and in the case of Polish learners of Dutch, especially in the early stages of acquisition. It can mean that Polish learners of Dutch will transfer their allowance of sonority falls to Dutch (negative transfer). This could cause them to accept illegal onsets in their second language. Even though transfer effects might occur in the early stages of acquisitions, it does not mean that L2 learners cannot acquire phonotactic knowledge of their L2. It has been established by, among others, Weber & Cutler and Trapman & Kager that the acquisition of phonotactic knowledge in second language acquisition is possible. This means that it should not be impossible for Polish learners of Dutch to acquire the knowledge on the illegality of sonority falls in Dutch. Advanced L2 learners should be able to see the difference between illegal and legal Dutch onset clusters.

In this thesis, the hypotheses are as follows:

Hypothesis A: Less experienced learners will transfer L1 knowledge to their L2 and more experienced learners will use phonotactic knowledge of their L2 to judge well-formedness.

Hypothesis B: Polish learners of Dutch can learn that a sonority fall in the onset of syllables is less well-formed in Dutch by acquiring phonotactic knowledge of Dutch.

Hypothesis C: Consonant combinations that do not occur in the participant's native language will be judged in accordance with the Sonority Sequencing Principle.

It is expected that Polish learners of Dutch will be able to differentiate between well-formed onset clusters and ill-formed onset clusters in Dutch. However, it is very probable that between the L2 learners there is a difference in their proficiency. More experienced learners will be able to use phonotactic knowledge of Dutch to judge the test items and less experienced learners will probably rely more heavily on their knowledge of their L1. It is possible to assume that there will be a difference in results between sonority rises, plateaus and sonority falls. Even when an onset cluster is not native to the participants language, it is probably not impossible to judge unknown clusters on their possible well-formedness.

2. The experiment

2.1 Method

To test whether Polish learners of Dutch can acquire the phonotactic knowledge on the well-formedness of consonant clusters in the onset of Dutch syllables, an experiment was conducted. The experiment consisted of a task in which the Polish and Dutch participants had to judge nonwords on a 7 point (Likert) scale. Using a scale provides one with more detailed information than binary answer options would. The Polish learners of Dutch were additionally tested on their proficiency of Dutch by doing a c-test. The Dutch control group has not taken this proficiency test, as the proficiency results will be compared among the Polish learners and not between the Polish and Dutch participants.

2.2 Participants

11 Polish participants filled in the questionnaires and 14 Dutch participants filled in the questionnaire**.** The Dutch participants were upper and middle class people with different educational backgrounds. Some had a university degree and others only finished secondary school. The Polish participants were a more diverse group. Some participants came from a lower class background and others were middle class. Some of the Polish participants took Dutch classes and others had never received any Dutch language instruction. More information on the Polish participants can be found in the following Table.

	Total score proficiency test	How often do you speak Dutch?	How often do you speak Polish?	How long have you been in NL?	Have you taken Dutch classes?
P1	**46**	**Every day**	**Every day**	**5 years**	**No**
P2	**43**	**Every day**	**Every week**	**8 years**	**No**
P3	**47**	**Every day**	**Every day**	**6 years**	**No**
P4	**0**	**Every day**	**Every day**	**14 years**	**Yes**
P5	**0**	**Every week**	**Every day**	**2 years**	**Yes**
P6	**13**	**Every week**	**Every day**	**14 years**	**Yes**
P7	**15**	**Every day**	**Every day**	**23 years**	**Yes**
P8	**15**	**Every day**	**Every day**	**12 years**	**No**
P9	**0**	**Less often**	**Every day**	**2 years**	**No**
P10	**6**	**Every week**	**Every day**	**4 years**	**Yes**
P11	**38**	**Every day**	**Every day**	**26 years**	**Yes**

Table 2: Background Polish participants.

The average time the Polish participants have been in the Netherlands is 10,545 years and the average time spent in Dutch courses is 21,818 months.

2.3 Materials

The nonwords that were used as test items were of differing categories: words containing clusters that are not allowed in Dutch, yet are allowed in Polish, words that contain onset clusters that are allowed in both languages and words that contain onset clusters that do not occur in either language. Additionally, these categories can be divided into three subgroups: sonority rises, falls and plateaus.

Polish	Polish & Dutch	Neither
Sonority Rise	Sonority Rise	Sonority Rise
Sonority Plateau	Sonority Plateau	Sonority Plateau
Sonority Fall	Sonority fall	Sonority Fall

Table 3: Subcategories of condition Polish, Polish & Dutch and Neither

The list of test items contains 41 sonority rises, 40 sonority plateaus and 42 sonority falls. Sounds combinations that are non-native to both groups of participants were chosen with the purpose of finding out whether sound combinations that are non-native to all participants are graded on the sonority scale which, if this is the case, could consequently suggest a universal preference for onset clusters that adhere to the SSP. For every sound combination (PLO+PLO, PLO+FRI etc.), two different consonant combinations were chosen from the Polish matrix and Dutch matrix (Trapman & Kager). The chosen combinations can be seen in Table 4.

The word list contained test items that were made up from onsets clusters chosen from the Dutch Matrix and Polish Matrix shown earlier, with the addition of a vowel and a consonant. All test items were made to be monosyllabic and the structure of all test items was CCVC. The test items were made to be like Dutch words, except for their onset cluster. The onset clusters could be a combination of consonants that is only possible in Polish, a combination that is possible in Dutch and Polish or a combination of consonants that is not possible in either language. All test items were checked by a native speaker of Polish to ensure that the nonwords were not accidentally real words in Polish. The onset combinations that were used in the test items can be seen in Table 4. The Table has been based on Matrix 1 by Trapman & Kager and on Matrix 2 that was based on information by Sledzinski. There are gaps in both matrixes which mean that certain combinations of sounds do not exist in Polish

or in Dutch. In Table 4, it becomes more clear where these gaps occur. A full list of the test items can be found in Appendix A.

	Polish		Polish &	Dutch	Neither		
Plo+Plo	tk	kp	X	X	tp	kb	plateau
Plo+Fri	tf	kf	ps	ks	kx	bv	rise
Plo+Nas	dn	dm	pn	kn	bm	pm	rise
Plo+Liq	tl	dl	tr	bl	X	X	rise
Plo+Gli	bw	X	tw	dw	gj	X	rise
Fri+Plo	fp	ʃk	st	sp	vg	zd	fall
Fri+Fri	fs	vz	sf	sx	xs	X	plateau
Fri+Nas	vm	zm	sm	sn	fm	ʒn	rise
Fri+Liq	sr	zl	fr	sl	X	X	rise
Fri+Gli	zj	xw	fj	zw	ʒj	ʃj	rise
Nas+Plo	X	X	X	X	mp	nk	fall
Nas+Fri	mʃ	mx	X	X	ns	mv	fall
Nas+Nas	mn	Mɳ	X	X	nm	X	plateau
Nas+Liq	mr	ml	X	X	nr	nl	rise
Nas+Gli	X	X	mw	mj	X	X	rise
Liq+Plo	rt	X	X	X	rk	lp	fall
Liq+Fri	rv	lv	X	X	rs	lz	fall
Liq+Nas	ln	lɳ	X	X	lm	rn	fall
Liq+Liq	X	X	X	X	rl	lr	plateau
Liq+Gli	X	X	X	X	rj	X	rise
Gli+Plo	wk	wb	X	X	wp	wd	fall
Gli+Fri	wz	wʒ	X	X	jv	ws	fall
Gli+Nas	X	X	X	X	wm	jn	fall
Gli+Liq	X	X	X	X	wr	jl	fall
Gli+Gli	X	X	X	X	wj	jw	plateau

Table 4: Consonant combinations used in the experiment.

The grey boxes in the Table above indicate that no sound combination of that kind was available in the two Matrixes. It would be useful to question whether these gaps are accidental or of a phonological nature. However, that is not within the scope of this thesis. As can be seen in Table 4, sonority falls are rarer than sonority rises. This holds for Polish as well as for Dutch. In Dutch there are no 'real' sonority falls. Even though sonority falls do occur in Polish, they do not seem to occur in ample amount. Sound combinations that occur both in Dutch and Polish are rare. The semi-rarity of sonority falls could be showing a general or universal preference for sonority plateaus or rises, even in Polish.

The proficiency test that was used for the Polish participants was taken from Keijzer's study on language loss. The so called c-test was shortened for this study. A c-test is a 'fill in the gaps' exercise. The Polish participants were presented with 3 texts instead of 5, because, for this study, solely the comparative level of proficiency was needed to be able to compare the Polish speakers to each other. The shortened version of the c-test can be found in Appendix B on page 39. The Polish participants were also asked to provide some information on how often they speak Dutch and Polish, whether they had received any instruction on the Dutch language and how long they had been in the Netherlands.

2.4 Procedure

All participants were given the questionnaire on paper and were given 15 minutes to finish it. The Polish participants were also provided with a questionnaire on their Dutch language proficiency and language background for which they also received a time limit of 15 minutes. For the participants of the study, there was always someone present to answer questions about the questionnaires. The main purpose of the study was kept from the participants, until they were finished with the questionnaires, as not to give them clues on what factors were most important.

For every word, the participants were asked to grade how well-formed the nonword is to Dutch standards (this is a word that can definitely be a Dutch word or this word is not like Dutch at all). The participants received the instruction on paper. The test items were also presented on paper and next to it a 7 point scale was shown on which they were to indicate their 'grade'. The scale looked like this:

O	O	O	O	O	O	O
1	2	3	4	5	6	7

If the nonword was given a score of 1, it meant the participant thought the word was not at all like a Dutch word. If they gave the nonword a score of 7, it meant that the participant thought it looked very much like a Dutch word. The precise instructions for the wordlist questionnaire were:

"Straks krijgt u een lijst met onzinwoorden te lezen. Deze woorden hebben geen betekenis, maar kunnen wel in meer of mindere mate op Nederlandse woorden lijken. De bedoeling is dat u het woord een score geeft van 1-7, waarbij 1 betekent dat het u denkt dat het geen mogelijk Nederlands woord zou kunnen zijn en 7 betekent dat u denkt dat het wel een Nederlands woord zou kunnen zijn. Er zijn geen goede of foute antwoorden en u heeft 15 minuten om de lijst in te vullen. Na deze woordenlijst zal er nog een taaltestje afgenomen worden om een indruk te kunnen krijgen van uw Nederlandse taalvaardigheid. Hiervoor heeft u ook 15 minuten. "

Translation: *Later, you will read a list of nonsense words. These words do not mean anything, but can look like Dutch word to some degree. You are supposed to give this word a score between 1-7, 1 meaning that you do not think it could possibly be a Dutch word and 7 means that you think it could possibly be a Dutch word. There are no right or wrong answers and you have 15 minutes to finish the questionnaire. After this wordlist, there will be a short language test to gauge your Dutch proficiency. For this task you will also have 15 minutes.*

For the Dutch participants the instructions were slightly shorter, since it did not include the instruction for the proficiency test.

3. Results

Test item 47, 'Dwan', was excluded from the results and analyses, since on some questionnaires the test item was spelled as 'Dawn'. As a result of missing values from more than 1 participant, probably due to the large amount of test items, the amount of data gathered per test item is unequal. There were 2 judgements missing from Dutch participant 10. The categories of these items were Polish+rise and Polish+plateau. Participant 9 from the Polish group left 4 answers blank. The categories of these test items were neither+fall, neither+rise, Polish+plateau, Polish+rise. Participant 11 left out the judgements for 3 test items. The categories of these test items were Polish+plateau, Polish+fall and Polish+rise. Since the missing data were random test items and not a structural apprehension to filling in the scores, the missing data were supplemented by calculating the average scores of the missing values' category.

To be able to perform a two-way repeated measures ANOVA on Vassarstats.net, the average scores of the data per condition and subcategory per participant were calculated.

3.1 Dutch Participants

In Table 5, the average scores for all categories by Dutch participants are shown. These scores were taken from the ANOVA calculations. The means in Table 5 and 7 were calculated from average scores on Vassartstats.net. In Table 8, the means were calculated with raw data.

	Polish	SD	NL+PL	SD	Neither	SD	Mean	Mean SD
Rise	**3,054**	0,886	**5,543**	1,069	**2,452**	0,513	**3,683**	0,823
Plateau	**1,752**	0,733	**5,442**	1,153	**1,761**	0,688	**2,985**	0,858
Fall	**1,473**	0,514	**6,309**	1,135	**1,642**	0,521	**3,142**	0,723
Mean	**2,093**	0,711	**5,765**	1,119	**1,952**	0,574	**3,270**	

Table 5: Results Dutch participants.

Dutch participants gave higher scores to sonority rises than to sonority plateaus and falls. They also gave higher scores to sound combinations that are familiar to them than to the other sound combinations.

The results from the ANOVA calculations were as follows: sonority was shown to have a significant effect at P=<,0001, language was also shown to have a significant effect at P=<,0001. An interaction effect between sonority and language was also found, of which the p-value was <,0001. To find the source of these effects, several t-tests were performed.

To see where the language effect stems from, three separate t-tests were done. The first was to compare the results of the words that contain onsets that occur in Polish and the words that contain onsets that occur both in Dutch and Polish. Secondly, a t-test was done comparing the results of the words containing onsets that occur in Dutch and Polish and words with onsets that do not occur in either language. Lastly, a t-test was done to compare the results of the words that contain onsets that occur in Polish and onsets that occur in neither language. In the next table, the p-values for these t-tests are shown.

	Polish+NLPL	NLPL+Neither	Polish+Neither
P-value	<,0001	<,0001	0,4479

Table 6: The p-values for the t-tests testing a language effect.

A significant difference was found between the judgements for the conditions ‘Polish’ and ‘Dutch+ Polish’ and between the judgements for’ Dutch+Polish’ and the ‘Neither’ category. There was no significant difference found between the categories ‘Polish’ and ‘Neither’. Several t-tests were also performed for the different sonority categories: falls were compared to plateaus, plateaus were compared to rises, rises were compared to falls. These t-test did not show any significant differences.

According to the ANOVA results, there is an interaction effect between language and sonority. To discover what language condition causes the interaction with sonority, all languages were separately compared to the sonority categories. Polish rises were compared to Polish falls, Polish falls were compared to Polish plateaus and Polish plateaus were compared to Polish rises. The same comparisons were made for the test items with sound combinations that occur in Dutch and Polish and for the test items with sound combinations that do not occur in either language.

For the sound combinations that occur only in Polish, sonority falls and sonority rises were judged significantly different by Dutch participants (P=<,0001). Sonority plateaus were also judged significantly different than sonority rises (P= 0,0002). However, the difference between judgement of sonority plateaus and sonority falls by Dutch participants is not significant (P=0,2557).

The sound combinations that occur both in Polish and Dutch do not show any significant sonority effects. There is no significant difference between sonority rises, plateaus or falls in judgements by the Dutch participants for this language condition. This can be attributed to the fact that all these sound combinations were familiar to the Dutch participants.

The judgements of the 'neither' language condition by Dutch participants were influenced by sonority. Sonority rises were judged significantly different than sonority falls (P=0,0003) and sonority rises were judged significantly different than sonority plateaus (P=0,0060). There was no significant difference between judgements of sonority plateaus and sonority falls.

3.2 Polish Participants

In Table 7, the average scores for all categories by Polish participants are shown. These scores were taken from the ANOVA results

	Polish	SD	NL+PL	SD	Neither	SD	Mean	Mean SD
Rise	**2,919**	0,987	**3,034**	1,202	**2,929**	1,536	**2,961**	1,242
Plateau	**2,963**	1,644	**2,745**	1,356	**2,520**	1,357	**2,743**	1,453
Fall	**2,520**	1,443	**3,181**	1,621	**3,050**	1,882	**2,917**	1,649
Mean	**2,801**	1,358	**2,987**	1,393	**2,833**	1,592	**2,873**	

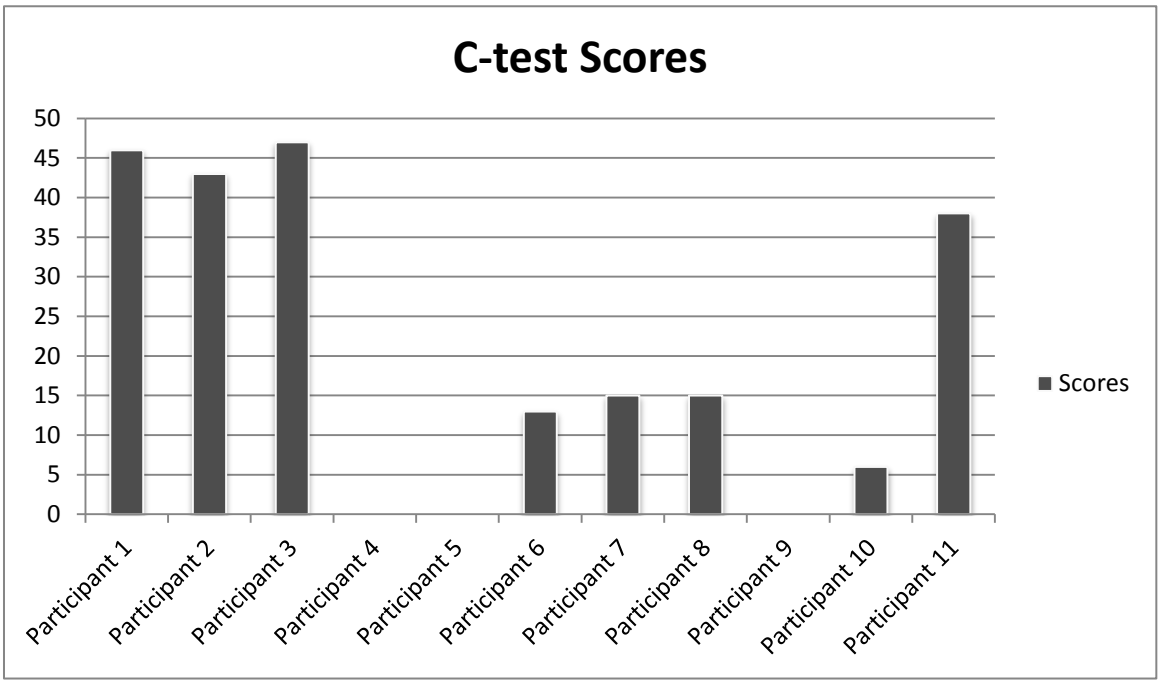
Table 7: Results Polish participants.

Polish participants gave higher scores to sonority rises than to sonority plateaus. Sonority falls were scored higher than sonority plateaus. When the Polish participants were confronted with a sound that is a combination found in both Polish and Dutch, they gave the combination on average a higher score than the sound combinations that only occur in Polish. The Polish participants gave the combinations that do not occur in either language on average higher scores than combinations that occur only in Polish. All average scores by Polish participants are between 2,7pts and 3pts. However, the results of the ANOVA for the polish participants were not found to be statistically significant and the language (P=0,687) and sonority (P=0,471) variables did not have a significant effect. This makes it impossible to give a statistical analysis of the Polish data.

3.2.1 The Proficiency Test

To be able to see a development in the acquisition of phonotactics, a proficiency test was given to the Polish participants. This c-test was taken from Keijzer's study on language loss.

For the entire test, the participants could receive 60 points. The total scores can be seen in the following diagram.



Many of the Polish participants said that the proficiency test was too difficult for them. Some did not even want to participate in that part of the study (participant 4).

Participants 5 and 9, who speak Dutch every week or less often and who have not been in the Netherlands for a long time, were incapable of filling in the proficiency test. Participant 4 has been in the Netherlands for 14 years and has taken lessons in Dutch, yet felt the proficiency test was too difficult to fill in. Participant 10 could not write in Dutch and found it impossible to fill in the proficiency test for that particular reason. The Polish participants were also asked to answer some additional questions on their language background. The answers to these questions can be found in paragraph 2.1.

To see whether the proficiency scores can illustrate the ability to distinguish between sonority levels and between the language conditions, the average scores for each participant for each sonority level and for the language conditions were calculated and can be seen in Table 8. In this table, the average scores by the Polish participants of onsets occurring in

Polish, both languages and neither language are also shown. Below the individual Polish participant scores are the average scores by Dutch participants. The Polish participants are listed by their scores of the proficiency test. The highest scoring participant is the first participant in the table and the lowest scoring participant is the last participant in the table.

	Proficiency test scores	Rise	Plateau	Fall	Polish	NL+PL	Neither
P3	**47**	**2,225**	**1,675**	**1,000**	**1,529**	**2,238**	**1,460**
P1	**46**	**3,275**	**2,575**	**2,500**	**2,725**	**3,381**	**2,580**
P2	**43**	**1,150**	**1,050**	**1,047**	**1,078**	**1,285**	**1,000**
P11	**38**	**4,466**	**3,992**	**4,781**	**3,728**	**4,142**	**5,240**
P8	**15**	**2,250**	**2,275**	**2,142**	**2,372**	**2,333**	**2,020**
P7	**15**	**3,875**	**3,800**	**4,000**	**3,902**	**3,095**	**4,220**
P6	**13**	**3,900**	**3,125**	**4,166**	**3,784**	**4,000**	**3,580**
P10	**6**	**1,525**	**1,000**	**1,238**	**1,490**	**1,000**	**1,120**
P4	**0**	**4,375**	**5,275**	**5,357**	**5,176**	**4,428**	**5,080**
P5	**0**	**2,125**	**1,450**	**1,309**	**1,431**	**2,904**	**1,280**
P9	**0**	**3,392**	**3,889**	**3,476**	**3,424**	**4,047**	**3,552**
Dutch		**3,683**	**2,218**	**1,899**	**2,031**	**5,629**	**1,880**

Table 8: Individual average scores sonority levels and language conditions of Polish participants.

As is shown in Table 8, higher proficiency scores do not necessarily mean that the participants behave more like Dutch native speakers or that they are better at judging the test items than other participants.

3.3 Dutch Participants Compared to Polish Participants

For all instances of the 'Dutch and Polish' category of sound combinations, the Dutch

participants gave the combinations much higher scores than the Polish participants. Even when the combination was a plateau or sonority fall, the Dutch judged the combinations to be more like Dutch than the Polish participants did, despite the sound combinations occurring in both languages.

Of all test items in the category 'Polish', Dutch participants considered ten of these to be more like Dutch than the Polish participants did. All other test items that contain consonant combinations that occur in Polish were judged to be more acceptable in Dutch by the Polish participants. Of the 10 test items that were given higher scores by the Dutch participants, 8 were sonority rises, 1 was a sonority plateau ('Fsol') and 1 was a sonority fall ('Lvot').

The Polish participants generally gave the test items in the 'neither' category a higher score than the Dutch participants. On average, the Polish participants gave these test items a score that was 0,945pts higher than the score by Dutch participants. There were 6 test items to which Dutch participants gave higher scores. In 4 cases, the sound combinations were sonority rises, in one occasion it was a sonority plateau, in one other occasion it was a sonority fall.

The sound combinations that are considered to be sonority rises were scored higher by the Dutch participants than the Polish participants. The Dutch participants gave sonority rises an average score of 3.683pts. The Polish participants gave sonority rises an average score of 2.961pts.

Sonority plateaus are judged to be more like Dutch by the Polish participants than by the Dutch participants. The sonority plateaus are generally scored quite low on the scale. The average score that Dutch participants gave to sonority plateaus is 2,218pts and for Polish participants the average is 2,743pts.

The average score of all sonority falls by Dutch participants was 1.899pts, which is much lower than the scores for sonority rises and somewhat lower than the scores for sonority

plateaus. The average scores of sonority falls by the Polish participants was 2.917pts. The scores by the Polish participants are, for all sonority categories, on average almost equal. One of the hypotheses in this study is especially focused on the category of sounds that do not occur in either language and it poses that when a sound is not present in either language, the participants will use their knowledge on sonority rules to judge these test items. The Polish participants do not seem to distinguish between sonority rises, plateaus and falls.

To compare the results of the Dutch and Polish participants and to see whether there is a significant difference between the groups, 9 separate t-tests were performed. The results are shown the following table.

	PL+ Rise	PL+ Plateau	PL+ Fall	NLPL+ Rise	NLPL+ Plateau	NLPL+ Fall	Neither+ Rise	Neither+ Plateau	Neither+ Fall
P-value	**0,725846**	**0,040546**	**0,040573**	**0,000024**	**0,000039**	**0,000043**	**0,343859**	**0,113289**	**0,034375**

Table 9: P-values of t-tests.

For Polish sound combinations with rising sonority, there was no significant difference (P= 0,725) between the Dutch and Polish participants. For Polish sound combinations with a sonority plateau, there was a significant difference (P= 0,040) between the Polish and Dutch participants. For Polish sound combinations that contained a sonority fall, there was a significant(P= 0,000024) difference between participant groups. For all sound combinations that occur in both languages, including all sonority levels, there was a significant difference between the two participant groups. For these sound combinations, all P-values are less than 0,0001. For sound combinations that did not occur in either language and that contained a sonority rise and plateau in the onset of the syllable, there was no significant difference (P=0,343 and P= 0,113) between the Dutch and Polish participants. For sonority fall onset combinations from the 'Neither' category, there was a statistically significant difference between the participant groups (p=0,034).

4. Discussion

In general, the Dutch participants in this study are better at recognising the sounds that occur in Dutch and Polish than the Polish participants. The Dutch participants acted as expected. They judged the sounds according to sonority and according to language, rejecting the sonority plateaus and falls and rejecting the 'Polish' and 'neither' sound combinations. The only time the Dutch participants did not judge the test items according to the Sonority Sequencing Principle was with onset combinations that were familiar to them. The Polish participants scores for all conditions and subcategories are very similar to each other and it looks as if they do not wanted to give real judgements of the test items.

The results of the Polish participants overall can be seen as a null result, as it does not support the posed hypotheses of this study. It is difficult to ascertain why the Polish participants did not react as expected. The experiment set-up and materials seem to be in order when one looks at the results of the Dutch participants. It might be that the Polish participants were afraid to reject or accept the test items due to them feeling that their knowledge on the Dutch language was insufficient. The cause of these null results might also be because the participants felt pressured into participating in the study and did not feel motivated to fill in the questionnaires properly. However, none of the participants disclosed this to the experimenter, so it is impossible to know this for sure.

When looking at the proficiency test results in Table 8, it seems that better scores on the proficiency test could entail that the participant is better at judging the test items. Participants 2 and 3 scored best on the proficiency test and they gave sonority rises higher scores than sonority plateaus and falls. Participant 2 and 3 also gave higher scores to test items that occur in both languages than to the test items of the 'neither' and 'Polish' category. However, participant 5 who scored 0 points on the proficiency test also gave higher scores to

sonority rises than to plateaus and falls and higher scores to sound combinations occurring in both languages than to sound combinations that only occur in Polish or in neither language.

One of the hypotheses in this study especially focused on the category of sounds that do not occur in either language and it poses that when a sound is not present in either language, the participants will use their knowledge on sonority rules to judge these test items. When looking at Tables 5 and 7, at first glance it looks like hypothesis C might be confirmed. However, when one looks more closely at the results by the Polish participants, it can be seen that the sonority fall combinations are scored higher than the sonority plateaus and rises. The Polish participants do not seem to judge these test items according to the Sonority Sequencing Principle. The Dutch participants did react as expected and judged the test items adhering to the Sonority Sequencing Principle. Statistically, an effect for both sonority and language was found in the results of the Dutch participants. The Dutch participants probably use knowledge of sonority because Dutch is a language that adheres to the Sonority Sequencing Principle. In Polish, sonority falls and plateaus are all considered to be well-formed. This might have caused them to accept unknown consonant combinations that are sonority falls and plateaus, as well as sonority rises more readily than the Dutch participants.

5. Conclusion

The Dutch participants in this study behaved exactly as expected by judging according to language and to the Sonority Sequencing Principle when a sound was unfamiliar to them. The Polish participants did not behave as expected and provided no significant results. It is impossible to conclude that more proficient Polish participants perform better in general than less proficient speakers on the judgement of the test items. Since many Polish participants felt the proficiency test was too difficult, not all of them participated in it. It might be useful for future research to use a proficiency test that does not intimidate participants as much as the c-test used in this study did. Since the c-test is a 'fill in the gaps' type of test, it is possible to edit it by filling in some more letters of the words that the participants have to fill in beforehand, creating a simplified version.

It is not possible to tell whether Hypothesis A is holds or not, as the results of the Polish participants do not show anything conclusive and do not suggest that less proficient learners use knowledge of their first language for this experiment and that more proficient learners use phonotactic knowledge. Subsequently, due to the null results of the Polish participants, it is not feasible to conclude whether hypothesis B holds or not.

Hypothesis C poses that when a sound does not occur in the language of the participant, the participant will judge nonwords based on the Sonority Sequencing Principle. The results from the experiment in this study have shown that this hypothesis holds for the Dutch participants since they show significantly different judgements for sonority rises, plateaus and falls. It is impossible to provide a conclusion based on the results of the Polish participants, as it was a null result. It would be useful to test this hypothesis again with other participants and possibly a larger group of participants.

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Appendix A:

		1	**2**	**3**	**4**	**5**	**6**	**7**
1.	Dnom	O	O	O	O	O	O	O
2.	Tfat	O	O	O	O	O	O	O
3.	Bwes	O	O	O	O	O	O	O
4.	Tlap	O	O	O	O	O	O	O
5.	Tkan	O	O	O	O	O	O	O
6.	Fpal	O	O	O	O	O	O	O
7.	Fset	O	O	O	O	O	O	O
8.	Vmel	O	O	O	O	O	O	O
9.	Sres	O	O	O	O	O	O	O
10.	Zjen	O	O	O	O	O	O	O
11.	Msjen	O	O	O	O	O	O	O
12.	Mnos	O	O	O	O	O	O	O
13.	Mral	O	O	O	O	O	O	O
14.	Rtem	O	O	O	O	O	O	O
15.	Rves	O	O	O	O	O	O	O
16.	Lnas	O	O	O	O	O	O	O
17.	Kfel	O	O	O	O	O	O	O
18.	Wzel	O	O	O	O	O	O	O
19.	Kpen	O	O	O	O	O	O	O
20.	Wkot	O	O	O	O	O	O	O
21.	Zlop	O	O	O	O	O	O	O
22.	Dlap	O	O	O	O	O	O	O
23.	Sjkan	O	O	O	O	O	O	O
24.	Dmes	O	O	O	O	O	O	O
25.	Zmot	O	O	O	O	O	O	O
26.	Vzan	O	O	O	O	O	O	O
27.	Chwat	O	O	O	O	O	O	O
28.	Mchan	O	O	O	O	O	O	O
29.	Wbos	O	O	O	O	O	O	O
30.	Lnjar	O	O	O	O	O	O	O
31.	Lvot	O	O	O	O	O	O	O
32.	Mlep	O	O	O	O	O	O	O
33.	Mnjal	O	O	O	O	O	O	O
34.	Wzjap	O	O	O	O	O	O	O
35.	Psep	O	O	O	O	O	O	O
36.	Pnal	O	O	O	O	O	O	O
37.	Frol	O	O	O	O	O	O	O
38.	Twep	O	O	O	O	O	O	O

39.	Ston	O	O	O	O	O	O	O
40.	Sfot	O	O	O	O	O	O	O
41.	Fjep	O	O	O	O	O	O	O
42.	Trin	O	O	O	O	O	O	O
43.	Smor	O	O	O	O	O	O	O
44.	Ksap	O	O	O	O	O	O	O
45.	Knep	O	O	O	O	O	O	O
46.	Blan	O	O	O	O	O	O	O
47.	Dwan	O	O	O	O	O	O	O
48.	Spol	O	O	O	O	O	O	O
49.	Tpel	O	O	O	O	O	O	O
50.	Snet	O	O	O	O	O	O	O
51.	Slar	O	O	O	O	O	O	O
52.	Zwap	O	O	O	O	O	O	O
53.	Schan	O	O	O	O	O	O	O
54.	Kchan	O	O	O	O	O	O	O
55.	Bmas	O	O	O	O	O	O	O
56.	Gjot	O	O	O	O	O	O	O
57.	Vgen	O	O	O	O	O	O	O
58.	Chsan	O	O	O	O	O	O	O
59.	Fmot	O	O	O	O	O	O	O
60.	Djal	O	O	O	O	O	O	O
61.	Mpol	O	O	O	O	O	O	O
62.	Nsat	O	O	O	O	O	O	O
63.	Nmot	O	O	O	O	O	O	O
64.	Nrip	O	O	O	O	O	O	O
65.	Rkol	O	O	O	O	O	O	O
66.	Rson	O	O	O	O	O	O	O
67.	Lmit	O	O	O	O	O	O	O
68.	Rlap	O	O	O	O	O	O	O
69.	Rjam	O	O	O	O	O	O	O
70.	Wpon	O	O	O	O	O	O	O
71.	Jvet	O	O	O	O	O	O	O
72.	Wmal	O	O	O	O	O	O	O
73.	Nkes	O	O	O	O	O	O	O
74.	Wjon	O	O	O	O	O	O	O
75.	Kbor	O	O	O	O	O	O	O
76.	Bvot	O	O	O	O	O	O	O
77.	Pmes	O	O	O	O	O	O	O
78.	Zdos	O	O	O	O	O	O	O
79.	Djnel	O	O	O	O	O	O	O
80.	Sjap	O	O	O	O	O	O	O
81.	Wrot	O	O	O	O	O	O	O
82.	Mvit	O	O	O	O	O	O	O

83.	Nlot	O	O	O	O	O	O	O
84.	Lpet	O	O	O	O	O	O	O
85.	Lzap	O	O	O	O	O	O	O
86.	Rnel	O	O	O	O	O	O	O
87.	Lres	O	O	O	O	O	O	O
88.	Wdap	O	O	O	O	O	O	O
89.	Wsol	O	O	O	O	O	O	O
90.	Kpes	O	O	O	O	O	O	O
91.	Wbas	O	O	O	O	O	O	O
92.	Jwas	O	O	O	O	O	O	O
93.	Tkor	O	O	O	O	O	O	O
94.	Jnil	O	O	O	O	O	O	O
95.	Tkel	O	O	O	O	O	O	O
96.	Kpan	O	O	O	O	O	O	O
97.	Sfal	O	O	O	O	O	O	O
98.	Fpes	O	O	O	O	O	O	O
99.	Kbat	O	O	O	O	O	O	O
100.	Tpon	O	O	O	O	O	O	O
101.	Stet	O	O	O	O	O	O	O
102.	Vzet	O	O	O	O	O	O	O
103.	Fsat	O	O	O	O	O	O	O
104.	Vzin	O	O	O	O	O	O	O
105.	Fsol	O	O	O	O	O	O	O
106.	Schet	O	O	O	O	O	O	O
107.	Kbel	O	O	O	O	O	O	O
108.	Chsop	O	O	O	O	O	O	O
109.	Sfar	O	O	O	O	O	O	O
110.	Mchal	O	O	O	O	O	O	O
111.	Wzom	O	O	O	O	O	O	O
112.	Mnjes	O	O	O	O	O	O	O
113.	Rlas	O	O	O	O	O	O	O
114.	Nmas	O	O	O	O	O	O	O
115.	Mnjor	O	O	O	O	O	O	O
116.	Mnet	O	O	O	O	O	O	O
117.	Rlem	O	O	O	O	O	O	O
118.	Lrop	O	O	O	O	O	O	O
119.	Wkel	O	O	O	O	O	O	O
120.	Jlep	O	O	O	O	O	O	O
121.	Mnas	O	O	O	O	O	O	O
122.	Wjel	O	O	O	O	O	O	O
123.	Jwor	O	O	O	O	O	O	O

Appendix B:

Vul het woorddeel in

Op de volgende bladzijdes staan 3 korte Nederlandstalige tekstjes. In de teksten zijn gaten gevallen. Het zijn geen hele woorden die zijn weggelaten, maar delen van woorden. Het is de bedoeling dat u uit het zinsverband probeert af te leiden welk woorddeel op de puntjes zou kunnen staan. De eerste zin is steeds helemaal intact gelaten om u een beetje op weg te helpen. U heeft 5 minuten de tijd per tekst.

Tekst 1:

Ik houd van Nederland en niet zo'n beetje ook. Waarom ik van het land houd is niet alleen omdat velen van wie ik houd hier leven, nee, het is me_____ dan d_____. De groo_____ reden v_____ mijn lie_____ voor het land ko_____ voort u_____ het feit dat al_____ zo geor_____ en syste_____ is. Er i_____ een systeem e_____ het wer_____. Je kan, ni_____ zonder twi_____, maar to_____ met dic_____ ogen er_____ uitgaan d_____ het recht zege_____.

Tekst 2:

Als je reist, heb je de kans om te zijn wie je wilt zijn óf degene die je echt bent. Dat komt om_____ niemand een ste_____ op je dr_____. Toen ik n_____ het rei_____ in Nederland teru_____, werd ik hele_____ gek. A_____ na vier dagen. A_____ ik z_____ dat men_____ zich opwo_____ over een honde_____ op de st_____, werd ik pan_____. Dan da_____ ik, mens, waar ma_____ je je dr_____ over? Ik ben gel_____ naar de psycholoog ges_____, want ik trok dat echt niet.

Tekst 3:

Openlijke narcisten zijn mensen met een opgeblazen gevoel over zichzelf. Ze ei_____ vaak ande_____ aandacht o_____ en ko_____ charmant ov_____, ond_____ het feit d_____ ze wei_____ besef he_____ van de beho_____ van anderen. Verb_____ narcisten zijn weli_____ net z_____ hevig met zichzelf be_____ en ev_____ arrogant a_____ openlijke narcisten, ma_____ ze do_____ dit o_____ een subti_____ manier.