

The Northern Subject Rule: Constraints without Input

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S4372549 | 8 JUNI 2017

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ENGELSE TAAL EN CULTUUR

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Title of document: The Northern Subject Rule: Constraints without Input

Name of course: Bachelor werkstuk Engelse Taalkunde

Date of submission: 8 June 2017

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Abstract

The Northern Subject Rule (NSR) is a grammatical pattern which allows verbs in the third person plural to have a verbal –s ending. The NSR is restricted by the Type of Subject constraint and the Subject Adjacency constraint. Hoendervangers (2016) found that speakers of Standard English and speakers of Dutch with English as their second language are sensitive to the NSR despite the fact that the NSR's pattern is not part of the grammar of their first language. She uncovered grammatical knowledge in these two speaker groups that goes beyond the input (see also Barbiers et al. (2015)). The results for the Dutch speaker group can be related to grammatical properties of Dutch, while the results for the English speaker group can be related to language contact. This study aims to replicate Hoendervangers' effect by examining Danish. Danish does not have subject-verb agreement and language contact between Danish speakers and speakers of the NSR is not likely. The results from a grammatical judgment test suggest that Danish speakers are also sensitive towards the NSR's constraints. This suggests that the NSR and its constraints are related to linguistic knowledge which may be universal, or at least rises above the grammatical knowledge obtained through the input.

Keywords: Northern Subject Rule, Type of Subject constraint, Subject Adjacency constraint, constraints without input, Danish, underlying grammatical knowledge

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The Northern Subject Rule: Constraints Without Input

1. Introduction

The Northern Subject Rule (NSR) is a grammatical feature which is present in Northern English dialects. This grammatical pattern allows verbs in the third person plural to have a verbal –s ending as well as a zero ending (- \emptyset), whereas Standard English only has the zero ending. The NSR is subjected to two constraints. One constraint is general (Type of Subject) and the other is limited to certain varieties of the NSR (Subject Adjacency).

The Type of Subject constraint states that the verb receives the verbal –s ending if the subject is lexical. An example of this can be seen in (1).

- (1) a. The men like football.
 b. *They likes football.
 c. The men likes football.

Example (1a) is correct for speakers of NSR-dialects, since it has the zero ending which is similar to the spelling in Standard English. Sentence (1b) is not correct for NSR-speakers, because the subject *They* is not lexical but pronominal. (1c) is correct for NSR-speakers, because the subject *The men* is a lexical subject. Thus, (1b) violates the Type of Subject constraint while (1c) does not.

The Adjacency constraint is not present in all varieties of the NSR. It states that for pronominal subjects, the verb does not receive the –s ending if the subject and the verb are adjacent. For an example, see (2):

- (2) a. *They likes football
 b. They always likes football

(2a) violates the Adjacency constraint because the subject and the verb are adjacent. In sentence (2b), the subject and the verb are not adjacent, meaning that sentence is correct for NSR-speakers because it does not violate the Adjacency constraint.

What follows from (1) and (2) is that as long as the subject is lexical, the –s can be realised. The Type of Subject constraint is more widespread than the Adjacency constraint, and is the most important of the two NSR conditions (de Haas & van Kemenade, 2015). The Adjacency constraint is only relevant for realising the –s if the Type of Subject constraint is violated, and the Adjacency constraint is not active in all varieties of the NSR.

This study builds on the work of Barbiers, Bennis, and Hendriks (2015) and Hoendervangers (2016). Barbiers et al. looked at the word order variation of verb clusters in Dutch. Dutch dialects use different variations of these verb clusters, meaning that they are not the same for every Dutch dialect. They showed that speakers of Dutch are able to make systematic judgments on the different orders of verb clusters in Dutch, even if it concerned orders that the speakers did not use themselves or even knew about. This showed that it is possible to uncover specific grammatical knowledge in speaker groups, even though this specific grammatical knowledge is not consciously present in these speaker groups.

Hoendervangers (2016) replicated a similar effect. By letting participants rank English sentences which did or did not violate the NSR constraints, she showed that both speakers of Standard English and speakers of Dutch with English as their second language are sensitive towards the NSR. This means that in general, these speaker groups preferred the sentences that did not violate the Type of Subject constraint and/or the Adjacency constraint. Not only did Hoendervangers uncover grammatical knowledge which could not have been generated through the input, she also found such an effect across languages.

By finding a sensitivity in both English and Dutch speaker groups, Hoendervangers (2016) ruled out that language contact between English and NSR-speakers is the cause of the sensitivity towards the NSR. In order to find out even more on the nature and the extent of this sensitivity, this study looks at Danish. Danish does not have subject-verb agreement, in contrast to Dutch and English and the NSR. Therefore, finding an effect within the Danish speaker group would mean that agreement can be ruled out as the cause for the sensitivity.

The research question of this study is whether it is possible to replicate Hoendervangers' (2016) results using Danish, a language that does not have subject-verb agreement like Dutch has. This way, it is possible to exclude agreement as the cause for the sensitivity that Hoendervangers found in the Dutch speaker group. It also allows us to learn more about (uncovering) innate grammatical knowledge.

Section 2 looks into the NSR and provides more detailed information about the nature and the origin of the NSR. This section also delves into the work of Barbiers et al. (2015) to explain the results they found and the consequences for this study in more detail. Section 3 focusses on a new methodology by closely examining Hoendervangers' (2016) setup. Section 3 also illustrates similarities between Dutch and the NSR. Section 4 describes the pretest. Section 5 is structured in the same way as Section 4, except that the materials and methodology have been combined. The results of the actual test are discussed in Section 6. A

general discussion on the results and the study as a whole is given in Section 7. Section 8 concludes this study.

2. Literature Review

Section 2.1 reviews literature on the Northern Subject Rule (NSR). First, it will provide some basic information regarding the NSR's character. Then, it illustrates different theories regarding the NSR's origin, and the shortcomings of these different theories. Section 2.2 delves into the work of Barbiers, Bennis, & Hendriks (2015). They recently made a case for the existence of grammatical knowledge that could not have been acquired on the basis of the input, and this study builds on that idea.

2.1 Origin and nature of the Northern Subject Rule

The Northern Subject Rule (NSR) is a grammatical pattern which allows verbs in the third person plural to have an –s ending. This means that within NSR-dialects, the verb can have either a zero ending (- \emptyset) or an –s ending (Pietsch, 2005). The NSR is governed by two constraints: the Type of Subject constraint (TS) and the Adjacency (Adj) constraint. These two constraints together determine whether the verb receives the zero ending or the verbal –s ending.

The Type of Subject constraint states that the subject needs to be lexical in order for the verb to receive the –s ending. For an example, see (3):

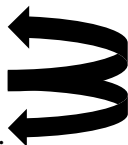
- (3) a. The boys walks in the garden.
 b. *They walks in the garden.

(3a) is considered a grammatical sentence for speakers of NSR-dialects, because the subject is a lexical one. The subject in (3b) is not lexical but pronominal. Therefore, the sentence is considered ungrammatical for speakers of NSR-dialects. Speakers of Standard English would consider both sentences to be ungrammatical, since Standard English only has the zero ending on the verb in the third person plural, and not the verbal –s ending.

The Adjacency constraint states that for the verb to receive the verbal –s ending, the subject and the verb have to be separated. If they are separated by an adverbial, then the nature of the subject loses its crucial importance for realising the verbal –s. Consider (4):

- (4) a. They always walks in the garden.
 b. *They walks in the garden.

(4a) is a grammatical sentence because the subject and the verb are not adjacent. (4b) is not grammatical because the subject and the verb are adjacent, and because the subject is not lexical but pronominal. In other terms, there are two ways for NSR-speakers to turn an ungrammatical sentence in the third person plural into a grammatical one. These two ways are illustrated in (5):

- | | | | |
|-----|-----------------------------------|---|-------------------|
| (5) | a. The girls walks in the park. |  | + Lexical Subject |
| | b. *They walks in the park. | | |
| | c. They always walks in the park. | | + Adjacency |

Sentence (5b) is ungrammatical because it violates both the Type of Subject condition as well as the Adjacency condition. These sentences can be turned into grammatical sentences (for speakers of the NSR) by changing the pronominal subject into a lexical subject as in (5a) or by ensuring that the subject and the verb are not adjacent as in (5c).

In their corpus study De Haas and van Kemenade (2015) showed that in early Middle English, the Type of Subject constraint, also called the subject condition, is consistent across Northern Middle English. There is an area in which the NSR is most prominently active, and a peripheral area where the conditions of the NSR are less dominant. Their study also showed that the subject condition is the basis of the NSR, while the Adjacency constraint is more of a minor condition. The Type of Subject constraint is active in more varieties than the Adjacency constraint. This indicates that the subject condition is the more dominant condition on the NSR, and that it has been this way since early Middle English.

The Northern Subject Rule (NSR) has been attested in the north of England since at least the Middle English period, and the NSR's developments can be identified through texts written in that period. The NSR might have also been around during the early Middle English period, but since that period is characterised by a lack of written documentation on English dialects, the NSR's exact origins are not clear-cut (Pietsch, 2005). However, De Haas and Van Kemenade (2015) presented new evidence with regards to the NSR's early existence. Using corpora including early Middle English verb forms in the Northern Midlands, they showed that variation between the zero ending and the verbal ending was conditioned by the two constraints that are still the core of the NSR today, namely subject type and adjacency.

Researchers do not agree on the origin of the NSR, which has led to two different theories trying to explain its origin. There are language-internal hypotheses and language-external hypotheses which try to clarify and explain the NSR's rise (De Haas, 2011).

Language-internal hypotheses state that the NSR's pattern arose when Old English transitioned into Early Middle English. When this transition happened, Old English lost a lot of its possible affixes on verbs. After this transition, the northern system had the following verb paradigm in Middle English in the third person (Pietsch 2005):

| | | | |
|-----|------------|-------------|-------------------|
| (6) | 3 Singular | 3 Plural NP | 3 Plural pronoun |
| | -es | -es | - \emptyset /-e |

This led to a situation where verbs in the third person plural could have three different affixes, namely $-es$, $-e$, and $-\emptyset$, leading to confusion according to Pietsch (2015). Pietsch believed that this confusing system became unstable, and that because of this variation between the three possible endings, a new system of conditions was formed. As can be seen in (6), these conditions were based on subject type and adjacency in the third person plural. This way, people knew when to use which of the possible endings. This language-internal hypothesis does not assume that language contact between Celtic and Old English has played an important role in the eventual rise of the NSR. It has to be noted however, that Pietsch does not rule out the effect of language-contact between Brythonic and English entirely.

It has also been suggested that the NSR has developed due to language contact. The Celtic hypothesis holds that the NSR has developed especially in the Northern region of the British Isles and not in other parts because of the language-contact between the Brythonic languages spoken at the time and the English language. Klemola (2000) has argued that the NSR might be a structural feature transferred from Brythonic Celtic, which was spoken mostly in Northumbria. This theory stems from the observation that the NSR and Welsh have the same agreement system, namely that subject-verb agreement is or is not possible depending on the nature of the subject (De Haas, 2011). In contrast to the language-internal hypothesis, this hypothesis would explain why the NSR can only be found in the northern parts of the country, something which is not accounted for under the language-internal hypothesis. A downside of the language-external theory is that this hypothesis is based only on this observation mentioned before, which is the observation that Welsh and the NSR have a morpho syntactic pattern that runs parallel (De Haas, 2011). Opponents of the Celtic hypothesis, and thus proponents of the language-internal hypothesis, believe that language contact is not necessary for the NSR to rise. This supposed language contact could only have taken place during the early Old English period, but the NSR has not been attested in Old

English texts, and the Celtic Hypothesis thus does not explain why the NSR only arose years after this language contact (Pietsch 2005).

Both the language-internal theory as well as the language-external theory (Celtic hypothesis) have their pros and cons. The language-internal theory tries to argue that the generalized verb endings were the cause of the NSR's rise, while the Celtic hypothesis claims that language contact was the crucial factor for the NSR's rise. However, both theories cannot fully account for the NSR. The language-internal hypothesis cannot explain why the NSR is not active in dialects all over the country but only in the northern parts of the country. The Celtic hypothesis on the other hand cannot explain why the NSR arose so late, knowing that the language contact between Brythonic Celtic and Old English happened much earlier.

It has to be noted however, that while the debate on the NSR's origin is interesting, it does not have a direct effect on the structure or the nature of this study. It does however, illustrate the discussion between internal and/or external causes. As will be explained later, different speaker groups are sensitive towards the NSR. The exact cause of this sensitivity is unknown, and it could be that internal and/or external factors of language are the cause of this sensitivity. The discussion between internal and/or external factors comes back during a later stage of this study. This section has tried to provide more background information regarding the NSR's origin and nature in order to understand the frame of the rest of the thesis.

2.2 Verb cluster variation in Dutch

This section will mainly look at verbal clusters in Dutch, and the research conducted by Barbiers et al. (2015). This study uncovered grammatical knowledge in speaker groups that goes beyond the input of those speaker groups. This thesis has the same kind of goal: to uncover underlying grammatical knowledge that goes beyond the input of speaker groups, and explore more on the nature and the extent of this knowledge.

Two strongly contrasting views on first language acquisition can be distinguished. This debate on language acquisition is also called the nature versus nurture debate. Nativists, among them Noam Chomsky, believe that the human brain has an innate language acquisition device, also called Universal Grammar, which allows children to develop language skills (Demirezen, 1988). Empiricists, or behaviourists, argue that not the biological influences are most important when learning a language, but the external influences that come from the environment. A prominent proponent of this theory is Michael Tomasello. He believes that learning the structure of a language comes from language use, and not from an innate linguistic ability. According to Tomasello, children repeat utterances in order to come to a

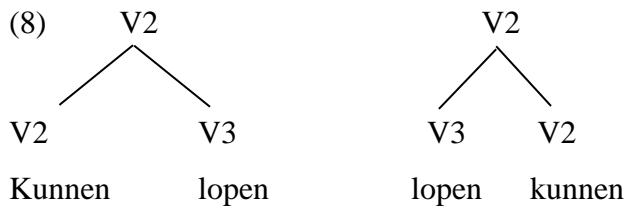
linguistic structure. This is done using cognitive processes. Tomasello (2009) believes that children are such fast language learners because the linguistic structure is generally universal, because the cognitive processes are the same in every person.

Barbiers et al. (2015) recently made a case for a more Nativist approach to language acquisition. They looked at word order variation in Dutch, which is relatively constant, except when it comes to the order within verb clusters. If there is more than one verb at the end of a clause (or sentence), the word order in embedded clauses is rather free across Dutch dialects (Barbiers et al.). In these embedded clauses with three verbs, the following six orders can be formed. See (7):

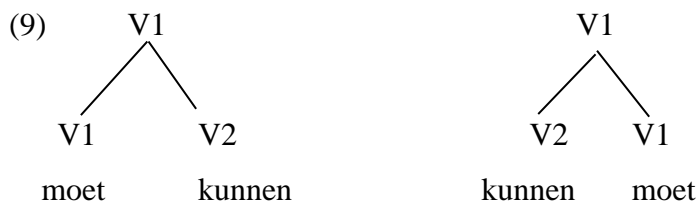
- | | | | |
|-----|----|---|----------|
| (7) | a. | Ik vind dat iedereen <i>moet kunnen lopen</i> . | V1-V2-V3 |
| | b. | Ik vind dat iedereen <i>moet lopen kunnen</i> . | V1-V3-V2 |
| | c. | Ik vind dat iedereen <i>kunnen moet lopen</i> . | V2-V1-V3 |
| | d. | Ik vind dat iedereen <i>kunnen lopen moet</i> . | V2-V3-V1 |
| | e. | Ik vind dat iedereen <i>lopen kunnen moet</i> . | V3-V2-V1 |
| | f. | Ik vind dat iedereen <i>lopen moet kunnen</i> . | V3-V1-V2 |
- I think that everyone should be able to walk.*

Out of these six logical orders, (7c) and (7d) do not occur in Standard Dutch while the other four do. These four orders are “semantically and pragmatically identical” (Barbiers et al., p. 2). The variation between these forms in different Dutch dialects seems to be determined by the geographical location of the dialect, and by the category and hierarchy of the auxiliaries in the verbal cluster (Barbiers et al.). Since the orders are identical in meaning, one would expect speakers of Dutch to base their judgments regarding these orders on what is spoken around them (i.e. their input). Barbiers et al. showed that there is an underlying grammatical system which speakers of Dutch are unconsciously aware of, and that this system partly determines which orders speakers of Dutch prefer regardless of their input.

Barbiers et al. (2015) proposed that verb clusters are complex verbs which are syntactically generated. For these clusters to arise, first V3 and V2 are combined, as can be seen in (8):



This leads to a two-verb cluster with the combinations V2-V3 and V3-V2. In order to generate three-verb clusters like the ones given in (9), the two-verb cluster containing V2 and V3 has to merge with V1. According to Barbiers et al. (2015), V1 merges to the left or to the right of the already existing cluster, thus excluding clusters which have V1 centred. See (9) for an illustration of how, according to Barbiers et al., V1 merges with the already existing V3-V2/V2-V3 combination:



The different orders in (8) and (9) can be combined, which, following their analysis, leads to these four orders:

- (10)
- a. V1-V2-V3
 - b. V1-V3-V2
 - c. V2-V3-V1
 - d. V3-V2-V1

In these orders V1 never occurs in between V3 and V2. Barbiers et al. (2015) predict that on the basis of their analysis, the V2-V1-V3 and the V3-V1-V2 order are impossible. When looking at the empirical data however, they found that the V3-V1-V2 combination, which would be excluded in their proposal, does occur in Dutch dialects. This is a problem for Barbiers et al. because this is not what they expected on the basis of their theoretical approach stating that V1 can never occur in between V2 and V3 in clusters with three verbs. The only order that does not appear in both standard Dutch and in Dutch dialects is the V2-V1-V3 order.

The presence of the V3-V1-V2 order in Dutch dialects has to be explained, because it is the only order which could not have been derived through their analysis, but that did emerge when looking at the empirical data. Barbiers et al. (2015) explain that participles are ambiguous, which means that they can be interpreted as being adjectival or verbal. Consider the following example:

- (11) a. Hij zag dat zijn fiets *gemaakt is*.
 He saw that his bike made is
 He saw that his bike is made / has been made.
- b. Hij zag dat zijn fiets *is gemaakt*.
 He saw that his bike has been made.

In (11a), the participle *gemaakt* can either be interpreted as ‘made’ or ‘has been made’. (11b) cannot have both the adjectival and the verbal interpretation, but only the verbal interpretation. Barbiers et al. (2015) take this to assume that non-verbal elements, like the adjectival reading of *gemaakt* in (11a) generally appear to the left of the verb in Dutch because Dutch has an OV-order. Thus, in the V3-V1-V2 order that is found in Dutch dialects, the V3 is not really a verb but more of a participle that has an adjectival reading. The V3-V1-V2 order can therefore be seen as “an instance of the *participle*-V1-V2 order” (p. 19). This order is no longer a problem for their analysis, as V1 is not in between two verbs anymore. The goal of Barbiers et al. was to see if these speakers would show structural and systematic judgments regarding the acceptability of various orders of verb clusters, to see how their judgements reflected what was spoken and used around them. One would expect speakers of Dutch dialects to base their judgments regarding the possible verb cluster orders on their input (i.e. on which order is used around them or on which order they use themselves).

In an acceptability judgement test the participants in the experiment were forced to rank the six orders from most acceptable to least acceptable. This resulted in the following ranking:

- (12) a.V1-V2-V3 >
 b.V3-V1-V2 >
 c.V3-V2-V1 =
 d.V1-V3-V2 >
 e.V2-V1-V3 =
 f.V2-V3-V1

The order of frequencies is as follows:

- (13) a. V1-V2-V3 =
 b. V3-V1-V2 >
 c. V3-V2-V1 >
 d. V1-V3-V2

Although the ranking and the order of frequencies is the same, this shows that the participants did not base their rankings on the orders occurring in their own dialect(s) or on the order frequency as a whole. The participants could not have based their rankings on frequency, because they could not know all the frequencies of verb clusters in the Netherlands. Although all of these orders are identical, the ranking and the frequency of these orders is very clear. The V1-V2-V3 and the V3-V1-V2 order are clearly preferred. The V3-V2-V1 and the V1-V3-V2 order are less preferred, and the orders that begin with V2 are not preferred at all.

The fact that the participants made such systematic choices that have led to a clear ranking indicates that speakers of Dutch (dialects) know more about verb clusters than what they experience through the input. Barbiers et al. (2015) thus uncovered grammatical knowledge which makes speakers prefer certain orders regardless of their input, but explaining where that grammatical knowledge originates from is more difficult.

Barbiers et al. (2015) try to explain their results by looking at the grammatical system. The V2-V3-V1 and the V2-V1-V3 orders are judged as the worst. The V2-V1-V3 order cannot be constructed via merge. The V2-V3-V1 could be generated through merge, but this order only occurs in clusters which have a perfect auxiliary and a modal or aspectual auxiliary. In clusters with two modal auxiliaries or in clusters without an aspectual auxiliary, this order does not occur. Since V2-V1-V3 does not occur at all and V2-V3-V1 only occurs very rarely, it seems reasonable that these two orders are judged as the worst. What makes their work interesting is the fact that the participants in this study showed such systematic judgments towards the different orders, and thus seemed to follow a clear pattern. The participants cannot have learned this system via their input, but it is still reflected in their judgments. Their study thus supports a more Nativist approach to language acquisition. It shows that people have grammatical knowledge which has not been provided by their environment, but instead might be provided by Universal Grammar. This allows them to

make judgments on the basis of innate grammatical knowledge instead of on the basis of the input provided by the environment.

This section has explained the study conducted by Barbiers et al. (2015). Their study has showed that it is possible to uncover grammatical knowledge in speaker groups, even though these speaker groups might not even be consciously aware of this knowledge. The speaker groups were confronted with a forced choice between the different verb clusters. This technique assures that the participants need to examine all different orders, instead of just the orders they use themselves. The study that this thesis describes will also use forced choice in order to make sure the participants have to evaluate all possible answers before making their decision. This study on the NSR attempts to uncover grammatical knowledge in a way that is similar to Barbiers et al.' study on the order of verb clusters.

3. Towards a new experiment

This chapter is divided into three parts. First, it summarizes Hoendervangers' (2016) work and discusses the results that she found. Secondly, it illustrates similarities between Dutch and NSR-dialects that could have caused Hoendervangers' results. Lastly, it examines Hoendervangers' study in more detail, looking mainly at the stimuli. It tries to explain why certain choices were perhaps not ideal for this kind of study and why this study has made different choices regarding stimuli and the overall design of the study.

3.1 Hoendervangers' (2016) findings

The study by Barbiers et al. (2015) has sparked the interest of Hoendervangers (2016). Her study focused on the Northern Subject Rule. Hoendervangers tried to find out whether non-speakers of the NSR-dialects, who do not have the constraints in their input, are sensitive to the two constraints of the NSR. This ties into Barbiers et al. because she tried to find a grammatical pattern in participants that could not have learned that pattern through the input, thus similar to the study of Barbiers et al.

Hoendervangers (2016) used native speakers of Standard English and native speakers of Dutch with English as their L2. It would be remarkable if non-speakers of NSR-dialects show sensitivity, since Standard English and Dutch do not have a pattern like the Northern Subject Rule, where adjacency or subject type can determine the agreement on the verb. Barbiers et al. (2015) found that speakers of Dutch dialects base their judgments regarding the order of verbs in a cluster on more than just what they use themselves and what they hear around them (i.e. the input), so Hoendervangers tried to conduct a similar experiment but with the NSR as a starting point. Similar to Barbiers et al, she used a test where the participants had to make a ranking between the variations of the NSR.

The participants in Hoendervangers' (2016) study were presented with stimuli each containing four sentences. One sentence violated both the Type of Subject constraint and the Adjacency constraint. One sentence violated neither and the other two sentences violated only one of the constraints. The participants were asked to rank the sentences, where rank #1 represents the best and #4 the worst sentence. An example of such a stimulus is given below:

- | | | |
|------|---|-------------|
| (14) | a. The girls usually goes to school on Wednesday. | (TS+ / SA+) |
| | b. Usually the girls goes to school on Wednesday. | (TS+ / SA-) |
| | c. They usually goes to school on Wednesday. | (TS- / SA+) |
| | d. *Usually they goes to school on Wednesday. | (TS- / SA-) |

(14a) does not violate any of the NSR's constraints. (14b) violates the Subject Adjacency constraint, because the subject and the verb are adjacent. (14c) violates the Type of Subject constraint because the subject is pronominal and not lexical. (14d) violates both of these constraints.

Hoendervangers (2016) showed that participants from both speaker groups are sensitive to the constraints of the NSR without ever having learned or acquired those constraints on the basis of their input. For a better illustration, see Figure 1:

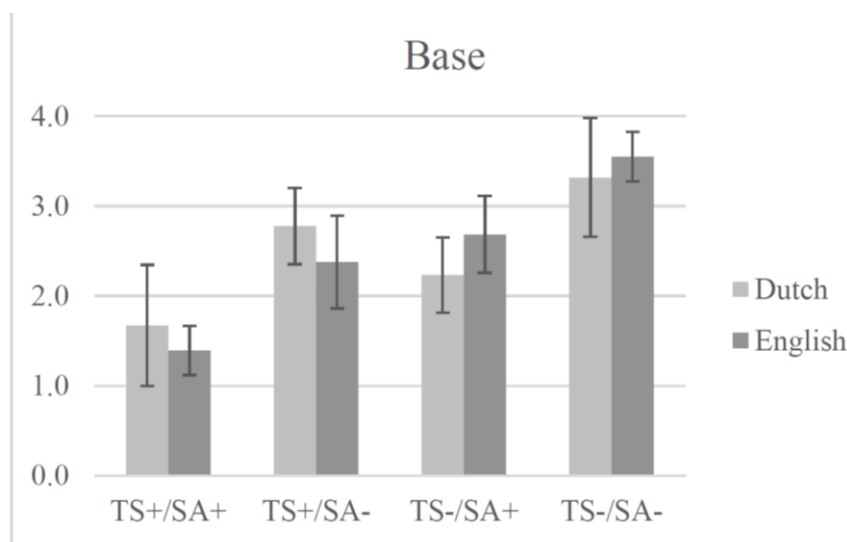


Figure 1. The average acceptability judgement ranking for base type items for the native speakers of English and the Dutch speakers of English. By Hoendervangers, I, 2016, p. 23. Reprinted with permission.

As Figure 1 shows, both the native speakers of Dutch and the native speakers of Standard English were sensitive towards the NSR's constraints. The TS+/SA+ sentence was ranked the best on average, while the TS-/SA- sentence was ranked the worst on average.

3.2 Advantages of Dutch & English speaker groups towards the NSR

The fact that speakers who have never encountered the NSR before show sensitivity towards the two NSR constraints suggests that there are latent principles underlying the NSR that are more generally part of someone's grammar. It could be that these constraints are always there, but latent without the relevant input, or it could be that these constraints are learned on the basis of other properties of the grammar. Since this field of research is still quite new, the sensitivity that was found by Hoendervangers (2016) is difficult to explain and define.

Because of empirical and theoretical shortcomings, it cannot be established where this sensitivity comes from yet.

For the native speakers of Standard English, one could argue that the sensitivity that Hoendervangers (2016) found is influenced by language contact. It cannot be excluded that the speakers of Standard English who participated in Hoendervangers' study either already have previous knowledge on the NSR and/or have been in contact with speakers who are familiar with or even use the NSR. In other words, it cannot be completely excluded that the native speakers of Standard English have some knowledge on the NSR before participating in the experiment.

Native speakers of Dutch with English as their L2 also showed a sensitivity in Hoendervangers' (2016) study. However, native speakers of Dutch who have English as their L2 are far less likely to have previous knowledge on the NSR, which makes it harder but also more interesting to try and explain the sensitivity found for these speakers. Since this speaker group also shows a sensitivity towards the NSR's constraints, the sensitivity has to be explained in another way. Either this speaker group has innate linguistic abilities to develop such a sensitivity, or the apparent knowledge on the NSR has to correlate with properties of the Dutch grammar. Because there is not much empirical data, it is hard to discuss the nature or the extent of latent principles that might cause the sensitivity in the two speaker groups Hoendervangers looked at. It is possible, however, to discuss properties of the Dutch language that might cause some sensitivity towards the NSR and its two constraints.

The first grammatical feature of the Dutch language that shows some similarity with the NSR is the inversion morphology of Dutch. Changing the place of the subject in a second person singular context can change subject-verb agreement. See (15) for an example:

- (15) a. Jij loopt.
 You walk
 'You walk.'
- b. Loop jij?
 Walk you
 'Do you walk?'

For the second person singular, the verb receives the –t ending, as in (15a). However, the Dutch verb paradigm states that in the second person singular, the verb does not receive the –t ending if the verb precedes the subject, as in (15b).

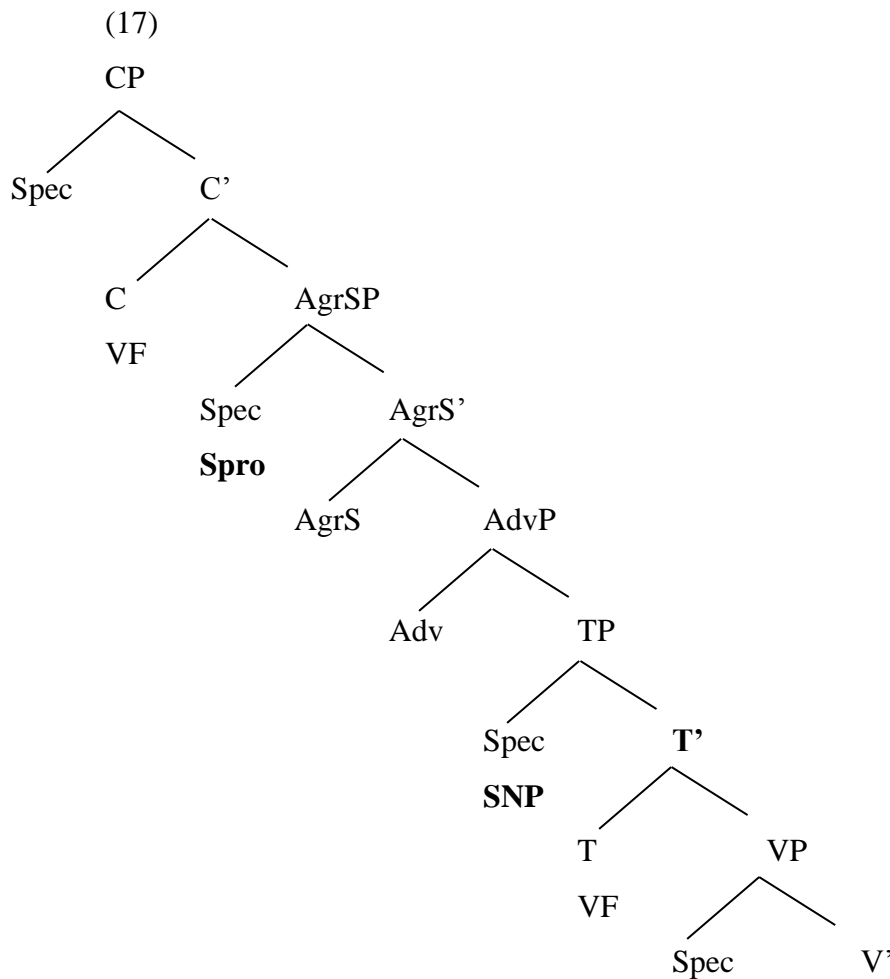
The NSR's subject-verb agreement variation is also dependent on the place of the subject with regards to the verb (i.e. Subject Adjacency). If the subject and the verb are not adjacent the verb is able to receive the verbal –s ending. If they are adjacent and the subject is pronominal, the verb cannot receive the verbal -s ending. This can be seen in (16):

- (16) a. They never walks.
 b. *They walks.

In other words, the position of the subject with regards to the verb can determine the ending on the verb. This feature is present in both NSR-dialects as well as in Dutch. This might be one of the properties of the Dutch language that causes the NSR sensitivity to arise in speakers of Dutch. More generally, it could be argued that speakers of Dutch are used to different verbal endings for the same person-number combination, similar to speakers of NSR-dialects.

Another possible property of the Dutch language that might have caused the sensitivity is the presence of multiple subject positions in Dutch as well as in NSR-dialects. On the basis of their corpus work, De Haas and Van Kemenade (2015) have argued for multiple subject positions in Old and Middle English. They believe that there are two positions for the subject to be in. The syntactic tree that illustrates their hypothesis can be seen in (17)¹

¹ Tortora and den Dikken (2010) have argued for a similar proposal, with the difference that they argue for three different positions for the subject to be in, instead of two positions. Their work looks at both Appalachian English as well as Belfast English, and they argue that these two variations of English have different subject positions. For the remainder of this study this distinction is not vital, but it is worth mentioning.



In this syntactic tree, the subject can be either in the Spro position or the SNP position, both given in bold. By looking at corpus data, De Haas and Van Kemenade found that there were clear preferences on subject position depending on the nature of the subject. To illustrate the preferences, see Table 1.

Table 1

Order of subject and diagnostic adverb in main clause questions in Old English

| | Pronominal subjects | Nominal subjects |
|----------------|---------------------|------------------|
| subject – verb | 98.9% | 18% |
| verb – subject | 1.1% | 82% |

Note. From “The Origin of the Northern Subject Rule: Subject Positions and Verbal Morphosyntax in older English,” by N. de Haas and A. van Kemenade, 2015, *English Language and Linguistics*, 19(1), p. 65.

This data clearly indicates that at least for some constructions (e.g. questions), the nature of the subject determines the place of the subject in a clause. Pronominal subjects are preferred to be in the higher position in the tree, while nominal subjects are preferred to be in the lower position in the tree. Connecting this data to the NSR, De Haas and Van Kemenade (2015) believe that the position of the subject determines the type of agreement the subject receives. In their analysis, if the subject occupies the lower position, the verb receives the verbal –s ending, while the higher subject position allows the verb to receive the zero ending on the verb. The verbal –s ending represents a kind of default agreement which the verb receives because it is syntactically unable to reach the higher subject position, and thus also unable to receive the zero ending. It is arguable that speakers of languages which have multiple subject positions are more prone to develop a sensitivity towards the NSR, since the NSR's constraints also seem to be based on multiple subject positions. Thus, a sensitivity towards the NSR's constraints could develop more easily in such languages. Dutch might be one of those languages.

Dutch has so called transitive expletive constructions (TECs). These are constructions that have an expletive subject and a transitive verb (Zwart 1997). In Dutch, the expletive subject in such sentences is *er*. An example of such a sentence is given in (18):

(18)

Er hebben gisteren veel mensen gezien dat Jan Mary kuste
 There have yesterday many people saw that Jan Mary kissed
 'Many people saw that Jan kissed Mary yesterday.'

For languages to have such constructions, it has been assumed that having an extra subject position is crucial (Bobaljik & Thráinsson, 1998). TECs have even been characterised as a subclass of multiple subject constructions (Bobaljik & Thráinsson). English does not have such constructions, as can be seen in (19).

(19) *There ate many people pizza yesterday

If TECs are indeed a syntactic representation of a clause structure in which there are multiple subject positions, then it could be argued that Dutch has multiple subject positions in a way that is similar to the NSR's structure. Thus, native speakers of Dutch may pick up the NSR's constraints quicker than speakers of other languages because Dutch has multiple subject

positions but some languages do not. Having multiple subject positions might be one of the reasons for the native speakers of Dutch to show a sensitivity towards the NSR's constraints in Hoendervangers' (2016) study.

So far, two properties of the Dutch language have been discussed that could have caused the sensitivity that Hoendervangers (2016) found. One of them is the inversion morphology, which allows the verb to receive a different ending if the subject changes its position. The other feature of the Dutch language is that the transitive expletive constructions of Dutch indicate that Dutch has multiple subject positions, just like NSR dialects have (De Haas & Van Kemenade, 2015). Still, the relationship between these two properties of the Dutch language and the properties of the NSR is not exactly clear. For instance, English does not have TECs but speakers of Standard English do show a sensitivity towards the NSR's constraints. However, native speakers of Standard English might have developed a sensitivity towards the NSR because language contact with speakers of NSR dialects.

To sum up, Hoendervangers looked at speakers of Standard English and speakers of Dutch. Both speaker groups showed a sensitivity towards the NSR's constraints. For the speakers of Standard English, it could be argued that they have previous knowledge on the NSR due to occasional contact with speakers who come from the northern parts of the country. For the speakers of Dutch this sensitivity is harder to explain, but the grammatical features of Dutch might help this speaker group develop the sensitivity. In other words, native speakers of English and Dutch are arguably better in recognising the NSR's patterns due to different reasons.

In order to rule out this possible familiarity effect, a new experiment should focus on a language which does not have the potential advantages that English and Dutch have. This makes it possible to rule out the possibility that the sensitivity found originates from properties of the language the participants are speaking as much as possible. By looking at Danish it can be examined whether the sensitivity is influenced by properties of the language that are similar to the NSR's properties, because Danish has less of these properties than Standard English and Dutch have.

The Danish language lacks agreement. This means that there is no subject-verb agreement variation if the subject changes position or nature, because there is no agreement to vary with. Also, transitive expletive constructions (TECs) are not attested in Danish and in other Mainland Scandinavian languages (Koster & Zwart, 2000). An example of the same TEC in Dutch, English and Danish is given below:

(20)

| | | | | | | |
|----------------|-------------------------------|---------|---------|-----|-------|---------|
| <i>Dutch</i> | Er | heeft | iemand | een | huis | gekocht |
| | There | has | someone | a | house | bought |
| <i>Danish</i> | *Der | nogen | købte | et | hus | |
| | There | someone | bought | a | house | |
| <i>English</i> | *There | has | someone | a | house | bought |
| | ‘Someone has bought a house.’ | | | | | |

Also, it is unlikely that many native speakers of Danish come into contact with speakers of NSR dialects. In other words, Danish does not have the same degree of overlap with the NSR dialects that Dutch and English do have. If a similar same sensitivity in Danish speakers is found, then it would be reasonable to assume that the sensitivity originates from latent principles which have to be general. The general principles cannot be related to agreement or to the availability of multiple subject positions (Dutch), or to potential language contact (English). Not finding this sensitivity would suggest that the properties of the L1 of the participants determine if they are sensitive to the two constraints of the NSR. A practical reason for opting for Danish is due to personal connections. Finding Danish participants was expected to be less difficult than finding participants from a different (Scandinavian) language.

3.3 Hoendervangers’ (2016) setup

When analysing Hoendervangers’ (2016) setup there were five issues that needed to be tackled. One of the problems with Hoendervangers’ experiment is that she chose to present the stimuli in pairs of four. The Type of Subject constraint and the Subject Adjacency constraint were combined, which led to four pairs that had to be ranked (see 21):

- (21)
- | | | |
|----|--|-------------|
| a. | The girls usually goes to school on Wednesday. | (TS+ / SA+) |
| b. | Usually the girls goes to school on Wednesday. | (TS+ / SA-) |
| c. | They usually goes to school on Wednesday. | (TS- / SA+) |
| d. | *Usually they goes to school on Wednesday. | (TS- / SA-) |

The main issue with presenting the stimuli in pairs of four is that the Type of Subject constraint and the Adjacency constraint are being combined in these sentences. If there is a preference for a certain sentence, then it is hard to find out which constraint has caused this

preference. In other words, a possible sensitivity towards one of the two constraints cannot be traced back to either one of them. It is possible to conclude which TS/SA combination is ranked the best this way, but separating the two constraints makes the task less complex and the results more transparent. This way it is possible to trace back any preference whatsoever to the individual constraints.

The second issue encountered in Hoendervangers (2016) is that only regular subjects were used in her stimuli. This means of course that all subjects end with an -s. It could be argued that this -s on the subject creates some sort of bias in which participants are either more or less in favour of choosing the lexical subject when the same sentence contains an -s on the verb as well. Participants might simply like two words ending with an -s, because it arguably creates a smoother sentence than when choosing for the pronominal subject. In other words, it could be the case that the -s on the subject superficially primes the -s on the verb, creating an unwanted effect. Although the effect of this might be small, it has to be taken into account.

It is also important to note that choosing a lexical subject over a pronominal subject can have multiple reasons, and that it therefore does not automatically mean that choosing the lexical subject is showing sensitivity towards the NSR. Participants could have a general preference for lexical subjects, perhaps because pronominal subjects refer back to other sentences. If the stimuli are presented without any context, then it is highly likely that participants choose the lexical subject because they have no context to place the pronominal subject in. In (21) for instance, participants might be tempted to choose *the girls* instead of *they* because they simply do not know to who *they* refers to. Adding context sentences might help neutralise a bias towards lexical subjects.

The fourth problem of Hoendervangers (2016) concerns the Adjacency constraint. The adverbials that Hoendervangers used had not been tested beforehand with regards to their general preference. The adverbials were given in initial position, violating the Adjacency constraint, and in medial position (between the subject and the verb), not violating the Adjacency constraint. However, although adverbials are generally grammatical in both initial position and medial position, there could still be a generally preferred position for certain adverbials. This leads to a tricky situation, because participants might choose the SA+ sentence not because of the NSR and its Adjacency constraint, but because they have a clear preference for that specific adverbial that was used in that sentence to be in medial position. In this situation, it is not exactly clear why the participant chose for the SA+ sentence.

The last main issue that should be tackled in a new experiment is the usage of filler items. Filler items distract the participant in such a way that they are unable to guess the goal of the experiment. Filler items can also make sure the participant stays focused, because the filler items might require the participant to do something very different compared to the actual test items. Hoendervangers (2016) did not use any filler items, but this study will.

4. Pretest experiment

This section describes the pretest. First, it explains how the issues that were found in Hoendervangers (2016) were tackled, ultimately resulting in splitting up the experiment into a pretest and an actual test. After the methodology, the participants, the materials and the procedure, the results of the pretest are discussed. Finally, a discussion on how to interpret the results of the pretest and consequences for the actual tests are presented.

4.1 Methodology

A pretest was conducted for numerous reasons. First, the problems found in Hoendervangers' (2016) study that were mentioned in Section 3.3 needed to be dealt with. In addition, it was necessary to construct stimuli that could be controlled for. Stimuli that turned out to have a clear bias could be omitted from the actual test. As already mentioned before, the stimuli were presented in pairs of two and forced choice was used. The amount of regular subjects and irregular subjects was the same, so that there was no potential bias towards lexical subjects because of the -s.

Another reason for the pretest is that it allowed us to examine whether there is a general preference for a lexical subject or for a pronominal subject. Hoendervangers' (2016) presented the four sentences without any context. It can be argued that this type of set-up directs the participants towards the lexical subject, since the pronominal subjects do not refer back to anything if there is no context to refer to. However, only adding one context sentence might also be problematic because then the participants might shift to the pronominal subject too easily. Our hypothesis on this can be illustrated as follows:

- (22) <No Context>
- a. The girls love shopping.
 - b. They love shopping.

The girls are at the mall.

- c. The girls love shopping.
- d. They love shopping.

The girls are at the mall. It is a hot day.

- e. The girls love shopping.
- f. They love shopping.

Without context, it was hypothesized that participants will pick the lexical subject. With only one context sentence, we believe they switch to the pronominal subject, because now the pronominal subject actually refers back to something, and because two sentences starting with exactly the same words is not very felicitous. With two context sentences however, no bias is expected. Choosing (22e) is pragmatically logical because there is a context sentence in between that creates some distance between the first time *the girls* are mentioned. Choosing (22f) is also pragmatically logical because it refers back to *the girls* of the first context sentence.

For the adverbials, we wanted to see whether there are certain adverbials that are generally preferred in either medial or initial position. Hoendervangers (2016) did not do this, and this might have influenced her results. An example of a stimuli in the adverbial part of the pretest can be found below:

- (23) a. Policemen generally act in tandem.
b. Generally policemen act in tandem.

In (23), the sentences are identical except for the placement of the adverb *generally*, occurring in medial position in (23a) and in initial position in (23b). (23a) is a sentence which does not violate the Subject Adjacency constraint, because there is an adverb between the subject and the verb. (23b) does violate this constraint because the subject and the verb are adjacent.

If adverbials which are clearly preferred in medial position are found, then it would not be wise to use these in the actual test. The reason for this is that a potential Adjacency effect cannot be assigned if these adverbials are used. It might simply be the case that participants prefer SA+ sentences not because they actually prefer subject adjacency, but simply because they prefer the adverbial to be in the medial position.

Lastly, filler items were added to the pretest in order to distract participants from the actual test items but also to keep them sharp. Filler items also prevent participants to guess the experiment's goal and it prevents them from picking a certain type of answer and use it for all of the stimuli, thus making their own contribution to the study worthless.

In sum, the pretest allowed us to test for general preferences (adverbial position and lexical/pronominal subjects) and it has allowed us to gather data which can be used for the actual test. It also provided us with the opportunity to use a different set-up compared to Hoendervangers' (2016) study in order to create a more stable experiment. The feedback on

the pretest that was received from the participants was also valuable, since it could be processed and possibly be used for the actual experiment.

4.2 Participants

13 native speakers of Danish participated in the pretest. The participants were enrolled at a university or had already finished university at the time. The wide range of connections led to a wide sociolinguistic variety of participants. The age ranged from 19 till 69. The participants participated voluntarily, and no participants were excluded from the analysis, except the 22 responses that did not fill in the whole questionnaire.

4.3 Materials

The questionnaire was constructed using Qualtrics. Excluding instructions, the pretest consisted of 87 questions. Four questions revolved around the language proficiency of the participants. They were asked about their L1 to make sure had the right speaker groups were targeted, and they were asked to rank their proficiency to make sure they were able to understand the sentences that were presented to them. Three questions had a demographic nature, and they were implemented to ask the participants' age, gender, and level of education. This leaves 80 actual questions, equally divided between test questions on adverbial placement (20) and on lexical/pronominal subjects (20).

These test items did not have the verbal –s endings on the verbs. The reason for this is that this study attempts to find a sensitivity towards the NSR by looking at native speakers of Danish. To do that, the pretest had constructions without the NSR (and thus without the verbal -s endings), while the actual test had constructions with the NSR (and thus with the verbal -s endings). Since the two tests are almost identical apart from the -s on the verbs, a significant difference in results can be attributed to the -s endings, and thus to the presence of the NSR. If there is a significant effect, then it can be supported that the participants are sensitive towards the NSR.

Each part had 20 filler items, which leads to a total of 80 questions. The questionnaire had to be filled in online via a link that was distributed via our Danish connections. As already explained the sentences were presented in minimal pairs. The answers were coded as 0 and 1. For the adverbial test items, 0 is equivalent to initial position and 1 is equivalent to medial position. For the lexicality test items, 0 is equivalent to a pronominal subject and 1 is equivalent to a lexical subject.

4.4 Procedure

Each participant completed the questionnaire online. Participants were asked to give their answers intuitively and to fill in the questionnaire in a place where they were able to concentrate. There was no time limit for the participants, meaning they could take a break from the pretest whenever they wanted. The test and filler items were randomised in general order as well as the order of answer possibilities. The questionnaire was accompanied by a progress bar so the participants could check their progress.

4.5 Results

4.5.1 Subject Adjacency

The pretest generated empirical data showing the preferred positions (if any) for the adverbials. This data could then later be used in the actual test, in order to exclude a clear bias towards either initial or medial position. Sentences were given where the adverbials could be in either initial or medial position. For a better illustration of the results of the pretest, see Table 2:

Table 2

Results Pretest (Subject Adjacency)

| | <i>N</i> | <i>M</i> | <i>SD</i> |
|--------------------------|-----------|------------|----------------------|
| Danish | | | |
| Subject Adjacency | 13 | .46 | .18 [.10-.65] |
| Lexicality | 13 | .46 | .20 [.20-.90] |

The initial position of the adverb has been coded as 0 and the medial position as 1. The Danish speaker group had a slight preference for the initial position on average ($M = .46$). Some adverbials did show a clearly preferred position according to the Danish participants. An example of this is the adverb *gradually*, which was preferred in medial position by 12/13 participants (92.3%). On the other side of the spectrum there was *luckily*, which 12/13 participants (92.3%) preferred in initial position. The preference of the Danish speaker group was not significant ($SD = .18, [.10-.65]$).

4.5.2 Lexicality of the Subject

For the lexicality pretest it was important to see whether there was a general preference for a lexical or a pronominal subject. Therefore, no individual subjects had to be taken out. These were the results:

Table 3.

Results Pretest (Lexicality)

| | <i>N</i> | <i>M</i> | <i>SD</i> |
|-------------------|-----------|------------|----------------------|
| Danish | | | |
| Subject Adjacency | 13 | .46 | .18 [.10-.65] |
| Lexicality | 13 | .46 | .20 [.20-.90] |

The pronominal subjects have been coded as 0 and the lexical subjects as 1. There was slight preference for the pronominal subjects overall ($M = .46$, $SD = .20$, [.20-.90]), but this preference was not significant.

4.6 Discussion

The pretest has provided with some very useful results. The first part of the pretest showed that the Danish participants slightly preferred the adverbial to be in initial position overall. However, there were some adverbials that were preferred in either initial or medial position by almost all participants. Those adverbials were taken out for the actual test. This was important especially for the adverbials that were preferred almost exclusively in medial position, because if they were left in the actual test (where the –s on the verb is present) a possible effect cannot be assigned to the NSR's constraints, but rather to the preferred position of the adverb, or perhaps both.

For the second part of the pretest it was important to examine whether there was an overall preference for a lexical or a pronominal subject. By adding not one but two context sentences, a context was created where both subject types were pragmatically felicitous. Since the results were close to a mean of .50, it could be argued that adding two context sentences instead of only one or even none is a good way to create natural stimuli where the choice between the two options is not obvious.

5. Actual Experiment

This section describes the actual test for the Danish students. Since the scope of this thesis did not allow for two separate Danish tests (one without the –s on the verbs and one with the –s on the verbs), one test has been distributed including the –s on the verbs. The results of this test have been compared to the results of the pretest.

5.1 Methodology and Materials

Looking at the results and the feedback of the pretest there were still some problems that had to be dealt with for the actual test. For the adverbials, there were some that were clearly preferred in either medial or initial position. Since many participants indicated that they thought the pretest was quite long, it was decided to omit some test items that had a clearly preferred medial or initial position. The pretest included twenty test items of each category, but the actual test included fifteen per category.

The filler items also changed. More filler items which had one grammatical answer option and one ungrammatical answer option were incorporated to keep the participants concentrated. If both answer options are (un)grammatical, then it might cause participants to lose their interest, which might cause the participants to fill in the questionnaire randomly. The amount of filler items stayed the same.

Another element that was changed concerned the language proficiency questions. In the pretest the participants had to rank their reading, listening, writing and oral English skills on a scale of one to ten. Still, this self-assessment does not really show someone's English proficiency. It is more of a personal reflection of one's proficiency. Therefore, LexTALE was added at the end of the questionnaire. LexTALE stands for *Lexical Test for Advanced Learners of English*, and it is a quick and practical indicator of the participants' English proficiency. LexTALE provides participants with a total of 60 (non)words which have to be judged on whether they are actual words or non-words (Lemhöfer & Broersma, 2012). Lemhöfer and Broersma compared the results of LexTALE with the results of two extensive and thorough tests of English proficiency, the Quick Placement Test (QPT) and the TOEIC test. The correlations between LexTALE and these two tests were substantial and significant, meaning that LexTALE can be used to provide an indication for general English proficiency. If there were participants who performed very bad on LexTALE, then those responses could be omitted. However, since the pretest did not include LexTALE, it is difficult to compare the proficiency of the pretest participants with the proficiency of the actual test participants.

The questionnaire was again constructed using Qualtrics. The test started with an introduction and an explanation of the first task. Then, the adverbial and lexical test items were again randomised with the filler items just like in the pretest, but this time this part of the test consisted of 70 questions instead of 80. This is because 5 test items were removed from each category. The means of the pretest changed after this removal. For Subject Adjacency $M = .51$ (was $.46$), while for lexicality $M = .49$ (was $.46$). After the first part, the participants had to complete the LexTALE, which starts with 3 practice items and then has 60 actual test items. This may seem very long, but the LexTALE can be completed within 4 minutes. After LexTALE, two background questions were added to make sure our participants had Danish as their first language and to find out how many years of formal English teaching they had received. Three demographic questions were needed in order to make sure the participants did not or had not lived in areas in which the NSR is active. After that the participants were asked to provide their email address if they wanted to win a prize. The questionnaire had to be filled in online via a link that was distributed via our Danish connections, and via Facebook. The sentences were again presented in minimal pairs. The answers were coded the same way as in the pretest.

5.2 Participants

27 native speakers of Danish participated in the experiment which had the –s on the verbs. The participants were enrolled at higher education or had already finished their higher education at the time of testing. (college and above). The ages ranged from 18 till 30, and the participants participated voluntarily. The majority of the participants were studying or had studied at university. Three participants were excluded from the test group because they live(d) in areas where the NSR is active in some shape or form (e.g. Scotland). This leaves 24 participants for the Danish test group. Respondents that did not finish the whole questionnaire were excluded as well.

5.3 Procedure

Each participant completed the questionnaire online. Participants were asked to give their answers intuitively, and to fill in the questionnaire in a place where they were able to concentrate. There was no time limit for the participants, so they could take a break from the pretest whenever they wanted. The test and filler items were randomised in general order as well as the order of answer possibilities. The questionnaire was accompanied by a progress bar so the participants could check their progress.

6. Results

6.1 Subject Adjacency

To compare the choices made by the Danish students in the pretest and the Danish students on the actual test, an independent t -test was conducted. On average, participants on the actual test, which included the verbal $-s$ ending, chose for an adverbial in medial position more ($M = .63$, $SD = .15$) than the participants of the pretest, which did not include the verbal $-s$ endings on the verbs ($M = .51$, $SD = .20$). This difference, $-.12$, BCa 95% CI $[-.23248 -\infty]$, was significant $t(35) = -2.01$, $p = .026$ (one-tailed hypothesis). It represented a medium-sized effect, $r = 0.32$. This effect size provides a quantitative measure for the strength of the phenomenon found. This medium-sized effect complements the statistical hypothesis testing which was done by the independent t -test. For a clearer illustration of the results, see Figure 2.

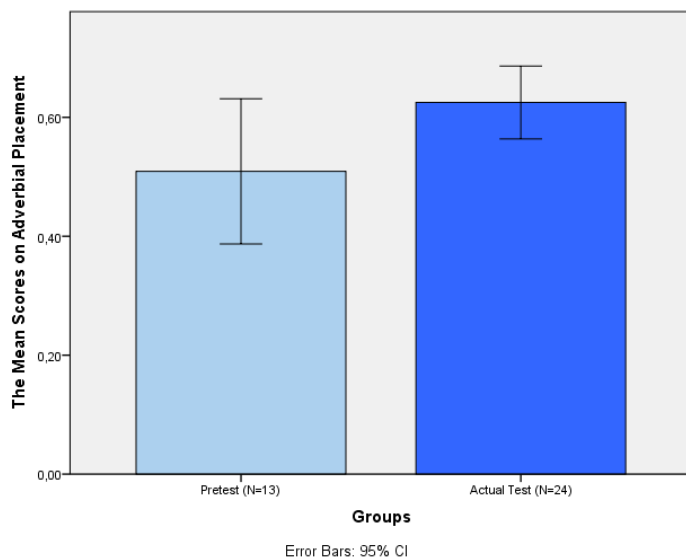


Figure 2. The results on Subject Adjacency. Sentences with adverbials in initial position were coded as 0, while sentences with adverbials in medial position were coded as 1.

This effect is significant. The t -test is one-tailed, because it was expected that the mean of the actual test would be higher because of the $-s$ ending on all the verbs.

6.2 Lexicality of the Subject

To compare the choices made by the Danish students in the pretest and the Danish students on the actual test, an independent t -test was conducted. On average, participants on the test that included the verbal $-s$ ending on the verbs chose for lexical subject more ($M = 0.66$, $SD = .19$), than those filling in the test without the verbal $-s$ endings on the verbs ($M = .49$, $SD = .25$). This difference, $-.17$, BCa 95% CI $[-.31362 -\infty]$, was significant $t(35) = -2.24$, $p =$

.016 (one-tailed hypothesis). However, it did represent a medium-sized effect, $r = 0,35$. Again, this effect size is a quantitative measure of the strength of the effect found, and it complements the statistical hypothesis testing that has been done. For a clearer illustration of the results, see Figure 3.

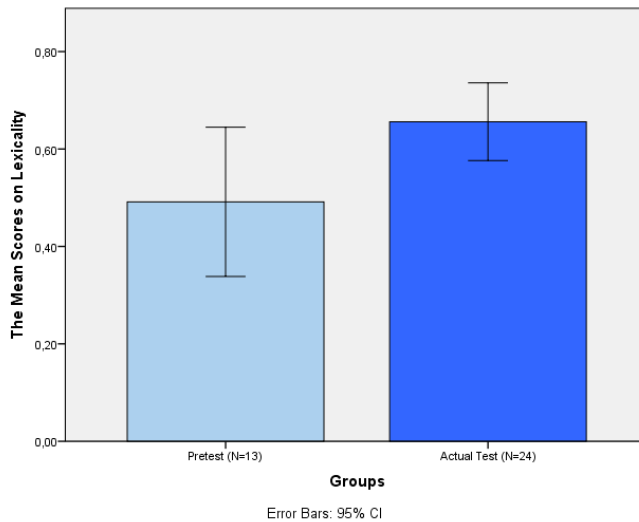


Figure 3. The results on Lexicality. Sentences with pronominal subjects were coded as 0, while sentences with lexical subjects were coded as 1.

Again, the t -test is one-tailed because the hypothesis was that the mean for the test with the $-s$ endings would be much closer to 1 than the mean of the test without the $-s$ endings.

6.3 LexTALE

As was mentioned in 5.1, it is difficult to compare the results of LexTALE with other data, since the pretest did not include LexTALE. Instead, the participants of the pretest had to indicate their proficiency by themselves. It is possible however, to compare the scores on the LexTALE test with the average proficiency indicated by the speakers of the pretest, to see if there are major differences between the means. The average means of the pretest and the average result on LexTALE can be found in Table 4.

Table 4

The English proficiency of the Danish speakers assessed by themselves in the pretest and the average result of LexTALE by the participants in the actual test.

| | <i>N</i> | Mean |
|----------------------------|----------|------------|
| Written proficiency | 13 | 8.2 |
| Spoken proficiency | 13 | 7.6 |
| Listening proficiency | 13 | 8.9 |
| Reading proficiency | 13 | 8.8 |
| Overall proficiency | 13 | 8.4 |
| LexTALE | 24 | 85% |

The proficiency was rated on a scale of 1 to 10. Table 4 shows that the participants in the pretest assessed their own proficiency quite high. It is important to remember that our target group was university students. Thus, the fact that the participants of the pretest assessed themselves with an 8.4 on average is not remarkable. The results of the actual test show that this target group indeed has a high English proficiency, since they scored 85% (out of 100%) on average.

7. Discussion

This study was conducted in order to find out whether the results that were found by Hoendervangers (2016) could be replicated by looking at a different language than Standard English and Dutch, using a more watertight methodology. The target language of this study is Danish. The one-tailed hypothesis of this study was that speakers of Danish would indeed be sensitive to the NSR's constraints despite never having encountered the NSR in their first language. In order to examine a possible effect, two tests were conducted. One test included verbal -s endings while the other test did not. These two tests were compared with each other to find out if an effect could be found.

This study shows that speakers of Danish were sensitive to the NSR's constraints, resulting in a significant effect. This means that the research question has been answered. This study managed to replicate Hoendervangers (2016) results by examining Danish. The hypothesis of this study is therefore confirmed: speakers of Danish are sensitive to the constraints of the NSR.

As already explained in Section 3.2, it could be the case that the sensitivity towards the NSR's constraints is always there, but that it is latent without the relevant input. Or, it could be that these constraints are learned on the basis of other properties of the grammar. Section 3.2 has examined possible grammatical overlap between Dutch and the NSR. An example of this overlap is that the subject position determines the verbal ending in the NSR but also in some constructions of Dutch. By looking at Danish this study showed that Danish does not appear to have such a degree of overlap with the NSR as Dutch. Therefore, Danish was selected to exclude this possible overlap. Since an effect has been found for the Danish speaker group, it appears to be the case that grammatical constraints like the ones in the NSR are part of one's innate linguistic capacity, and that they surface when confronted with relevant input.

The fact that a significant effect was found for the Danish speakers might indicate that the properties of one's L1 grammar do not play a part in the judgments of such sentences. This is in line with a Nativist approach to this phenomenon, because it diminishes the effect the environment (i.e. the grammar of a person's L1) has on the judgments of such sentences. Instead, the sensitivity that was found seems to originate from some abstract innate language skill.

This theoretical implication makes identifying the exact cause of this sensitivity and the nature of it more difficult and more abstract. Further research could examine Danish even

more closely, to try and find overlap between Danish and English. Then, future research could target languages that are even further removed from the NSR than Danish is.

It could be the case that this study has overlooked grammatical features and structures of Danish, and that, in contrast to what was claimed in Section 3.2, Danish has more grammatical and morphological overlap with the NSR than what has been observed in this study. Still, the NSR is based on agreement and Danish lacks any sort of subject-verb agreement. It also does not have multiple subject positions. That does make it more unlikely that a grammatical feature of Danish triggers a sensitivity towards this agreement phenomenon, but it cannot be excluded.

There are also more practical explanations for the results that were found. For instance, the Danish pretest and actual test differed a little bit concerning the amount of stimuli. The pretest had 20 test items per category and a total of 40 filler items. The actual test had 15 test items and 40 filler items. The nature of the filler items was also slightly different. The pretest consisted of filler items that had two grammatical answer options. The actual test also used filler items that had a grammatical and an ungrammatical answer option. The difference between the stimuli might have been small, but it cannot be excluded that this little difference ultimately stimulated a bigger difference. For instance, it could be that the participants in the actual test were better concentrated than the participants in the pretest, because the filler items stimulated them to pay more attention.

Future research could build on this work by examining other languages to see if the sensitivity still surfaces. It is also interesting to change the linguistic phenomenon that is looked at instead of the language, to see if that changes anything to the sensitivity. For instance, this study found that Danish speakers are sensitive towards the NSR, but that does not mean that they automatically are sensitive towards all grammatical patterns in English dialects. It is also interesting to see if there is a sensitivity to be found the other way around. For instance, it could be investigated whether speakers of NSR-dialects are sensitive towards Danish grammatical patterns. This direction of research is difficult however, because using Danish as the target language is not as pragmatic as using English.

Further research can also build on the results of this study, along with studies like Hoendervangers (2016) and Barbiers et al. (2015), to show that it is possible to uncover effects even if it seems very unlikely that there is any effect. Beforehand, it did not seem very plausible to claim that speakers of Danish are sensitive to the rules of a certain dialect in Northern-England. By showing the results of this study and studies like Barbiers et al. (2015) and Hoendervangers (2016) researchers can show that effects can be uncovered even though

it may not seem very reasonable or logical to assume that there is an effect to be found. This might lead to more research in different areas.

8. Conclusion

This study has examined the Northern Subject Rule, a grammatical pattern in Northern English dialects which allows verbs in the third person plural to have an –s ending. This is restricted by two constraints, the Type of Subject Constraint and the Subject Adjacency constraint.

Hoendervangers (2016) found that, although these constraints are not part of the input, Dutch speakers are also sensitive towards these constraints. This study has observed that Dutch has grammatical overlap with Danish, which might have caused this sensitivity. It has also examined the methodology of Hoendervangers, to try and improve the methodology for this study.

The goal of this thesis was to see if Hoendervangers results could be replicated for Danish. This way, agreement could be excluded as a potential factor for triggering a sensitivity towards the NSR's constraints. This has led new insights on the nature and the extent of these constraints.

Hoendervangers (2016) results were replicated successfully. The results show that Danish speakers are also significantly sensitive towards the constraints of the NSR. This suggests that the nature of such constraints seems to be more universal than what was thought before. In order to estimate the exact extent of these constraints, more languages need to be investigated. Dutch, English and Danish are all Germanic languages. Other studies could focus on languages that are not Germanic (e.g. Italic languages) to see if that changes the results. Still, it is arguable that speakers of many different languages show such a sensitivity because Danish, as stated before, lacks much overlap with the NSR. The fact that a significant effect was found nonetheless shows that these constraints are not limited to speakers of languages which have much grammatical overlap with the NSR.

Barbiers et al. (2015) showed that it is possible to uncover grammatical knowledge which goes beyond the input of certain speaker groups, but they looked for an effect within the same language. The results of this study confirm their observation for a different empirical domain and reinforces it by showing that it is also possible to uncover grammatical knowledge across languages, even if the two languages do not have much grammatical overlap. This study has created more empirical data within such a new field of research, which is always beneficial for the further development of that academic field.

This thesis has contributed to the field of research on this topic, which is still very new. In order to learn more about underlying grammatical knowledge and the influence this knowledge has on learning new languages, more empirical data is necessary. This study has

contributed to the field of research by providing more empirical data, and by showing that the extent of the constraints found by Hoendervangers (2016) goes beyond languages that present with grammatical overlap.

The conclusion of this thesis is that it is possible to replicate Hoendervangers' (2016) results for Danish speakers. What can be drawn from this is that the extent of the NSR's constraints and the underlying grammatical knowledge on the NSR go beyond speakers of linguistically similar languages (i.e. Standard English and Dutch). Exploring more about the nature and the extent of underlying grammatical knowledge has been the main contribution of this study to the relatively new field of research.

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Appendix I: The pretest

Section 1: Introduction

Thank you for participating in this study!

This survey is part of a study about the perception of English sentences by learners of English as a foreign language. The study is carried out by the department of English Language and Culture at the Radboud University in Nijmegen.

Please note that you are only allowed to participate if the following statements are applicable to your situation:

1. You have never studied a language or linguistics in your higher education (university-level);
2. You speak English as a foreign language;
3. You do not suffer from dyslexia nor any other reading disability.

Filling out the survey will take approximately 15 minutes. Please fill it out in an environment where you can concentrate. Your responses are completely anonymous. If you have any questions concerning your participation in this survey and/or the outcomes of the study, do not hesitate to contact us.

Thank you for your valuable contribution to our research!

Kind regards,

The CWI research team

Contact: m.hilten@student.ru.nl

Section 2: Explanation Pretest

In the following section, you will be presented with pairs of 2 sentences. Sometimes these two sentences are accompanied by some context sentences. Please choose the sentence of your preference out of each pair. Note that the differences between the two sentences may be minimal. Please provide your answers intuitively.

Section 3: Pretest Adverbial + Lexical

Example 1 (Adverbial test item):

- The family apparently moved abroad.
- Apparently the family moved abroad.

Example 2 (Lexicality test item):

The dogs seem to be having a great time. It is raining terribly, but ...

- The dogs love running around.
- They love running around.

Example 3 (filler items):

- Book covers slowly fade in the sun.
- Book covers fade slowly in the sun.

Adverbial Test Items

Pretest Adverbial Test Item 1:

- The family apparently moved abroad.
- Apparently the family moved abroad.

Pretest Adverbial Test Item 2:

- His parents evidently work hard every day.
- Evidently his parents work hard every day.

Pretest Adverbial Test Item 3:

- The students of course hate exams.
- Of course the students hate exams.

Pretest Adverbial Test Item 4:

- The cats probably sleep indoors.
- Probably the cats sleep indoors.

Pretest Adverbial Test Item 5:

- Policemen generally act in tandem.
- Generally policemen act in tandem.

Pretest Adverbial Test Item 6:

- The teachers luckily love their job.
- Luckily the teachers love their job.

Pretest Adverbial Test Item 7:

- The children typically go to school at age 4.
- Typically the children go to school at age 4.

Pretest Adverbial Test Item 8:

- The girls fortunately like candy.
- Fortunately the girls like candy.

Pretest Adverbial Test Item 9:

- The plants actually need a bit more sunlight.
- Actually the pants need a bit more sunlight.

Pretest Adverbial Test Item 10:

- The boys usually go to church on Sunday.
- Usually the boys go to church on Sunday.

Pretest Adverbial Test Item 11:

- The employees undoubtedly agree with this policy.
- Undoubtedly the employees agree with this policy.

Pretest Adverbial Test Item 12:

- Such plans inevitably cause disturbances.
- Inevitably such plans cause disturbances.

Pretest Adverbial Test Item 13:

- These pills gradually start to work in 20 minutes.
- Gradually these pills start to work in 20 minutes.

Pretest Adverbial Test Item 14:

- My daughters hopefully become independent women.
- Hopefully my daughters become independent women.

Pretest Adverbial Test Item 15:

- Ministers normally announce their plans in September.
- Normally ministers announce their plans in September.

Pretest Adverbial Test Item 16:

- City buses officially leave every 10 minutes.
- Officially city buses leave every 10 minutes.

Pretest Adverbial Test Item 17:

- Computers essentially work fast and easily.
- Essentially computers work fast and easily.

Pretest Adverbial Test Item 18:

- The actors unquestionably hate each other in real life.
- Unquestionably the actors hate each other in real life.

Pretest Adverbial Test Item 19:

- These questions surely make sense in context.
- Surely these questions make sense in context.

Pretest Adverbial Test Item 20:

- The attacks arguably pose a great threat to the country.
- Arguably the attacks pose a great threat to the country.

Lexicality Test Items

Lexicality Item 1:

My feet are always cold. Weirdly enough even during the summer.

- My feet need at least three layers of socks to be warm.
- They need at least three layers of socks to be warm.

Lexicality Item 2:

The dogs seem to be having a great time. It is raining terribly, but ...

- The dogs love running around
- They love running around

Lexicality Item 3:

These bacteria easily cause an epidemic. Many people are already struck.

- The bacteria spread rapidly.
- They spread rapidly.

Lexicality Item 4:

The trees were planted 15 years ago. The forest looks beautiful now.

- The trees grow taller every year.
- They grow taller every year.

Lexicality Item 5:

Look at the children! The party is a success.

- The children like candy.
- They like candy.

Lexicality Item 6:

The women in this town rarely come here. The shopping centre is always empty.

- The women prefer busier places.
- They prefer busier places.

Lexicality Item 7:

The mice linger at night. It's too dangerous during the day.

- The mice wait until the cat sleeps.
- They wait until the cat sleeps.

Lexicality Item 8:

The businessmen always seem in a hurry. Wall Street is a good place for making money.

- The businessmen work around the clock.
- They work around the clock.

Lexicality Item 9:

My grandchildren make me feel young again. Not everyone is as lucky as I am.

- My grandchildren visit every Sunday.
- They visit me every Sunday.

Lexicality Item 10:

The farmers are going through a tough time. The demand for produce grows every year, and...

- The farmers need to work very hard
- They need to work very hard.

Lexicality Item 11:

The girls are shopping. The weather has suddenly changed, so ...

- The girls need new shoes.
- They need new shoes.

Lexicality Item 12:

Those schools normally have strict schedules. The weather is very hot for this time of year, so ...

- The schools close early today.
- They close early today.

Lexicality Item 13:

These birds don't like to live alone. It's dangerous in this area, and ...

- The birds need to feel safe.
- They need to feels safe.

Lexicality Item 14:

The lions in this zoo are very scary. It's almost feeding time, and ...

- The lions roar terribly loudly.
- They roar terribly loudly.

Lexicality Item 15:

The politicians say the war will be over soon. It's about time.

- The politicians speak the truth, I hope.
- They speak the truth, I hope.

Lexicality Item 16:

These spokeswomen are very important to our organisation. One mistake can be fatal.

- The spokeswomen need to tread carefully.
- They need to tread carefully.

Lexicality Item 17:

These shoes look very good on John. Money is not an issue for him.

- The shoes seem to be made of expensive leather.
- They seem to be made of expensive leather.

Lexicality Item 18:

The tourists take over this park during summer. It's too warm in the sun, so ...

- The tourists claim the spots in the shade.
- They claim the spots in the shade.

Lexicality Item 19:

These cacti are very important to the desert. It's a very rough place, and ...

- The cacti supply water to the animals.
- They supply water to the animals.

Lexicality Item 20:

My teeth need a lot of care. Going to the dentist is expensive, but ...

- My teeth look good now.
- They look good now.

Filler Items

Filler Item 1:

- The men eat lunch in the cafeteria every day.
- The men eat lunch every day in the cafeteria.

Filler Item 2:

- The cats like to sleep on the sofa at night.
- The cats like to sleep at night on the sofa.

Filler Item 3:

- The bands play in this bar next Tuesday
- The bands play next Tuesday in this bar

Filler Item 4:

- The temperatures are highest by the sea in winter.
- The temperatures are highest in winter by the sea.

Filler Item 5:

- These boats sail to England on Monday
- These boats sail on Monday to England

Filler Item 6:

- My friends buy their food at the market on Tuesdays.
- My friends buy their food on Tuesdays at the market.

Filler Item 7:

- My classmates want to live in London next year
- My classmates want to live next year in London

Filler Item 8:

- Dolphins swim in shallow water during winter.
- Dolphins swim during winter in shallow water

Filler Item 9:

- Croissants sell very fast at this bakery on Sunday
- Croissants sell very fast on Sunday at this bakery.

Filler Item 10:

- His readers want to see him at the signing today.
- His readers want to see him today at the signing.

Filler Item 11:

- Good writers accurately portray their characters.
- Good writers portray their characters accurately.

Filler Item 12:

- My coins suddenly disappear whenever I go out.
- My coins disappear suddenly whenever I go out.

Filler Item 13:

- My grandparents usually sleep in the afternoon.
- My grandparents sleep in the afternoon usually.

Filler Item 14:

- The icecaps rapidly melt due to global warming.
- The icecaps melt rapidly due to global warming.

Filler Item 15:

- The authors probably write on more book
- The authors write one more book probably.

Filler Item 16:

- The chairs obviously belong in the other room.
- The chairs belong in the other room obviously.

Filler Item 17:

- The players briefly pause the game to get a drink.
- The players pause the game briefly to get a drink.

Filler Item 18:

- The schedules normally display all upcoming activities.
- The schedules display all upcoming activities normally.

Filler Item 19:

- Cars unavoidably crash on slippery roads.
- Cars crash unavoidably on slippery roads.

Filler Item 20:

- Book covers slowly fade in the sun.
- Book covers fade slowly in the sun.

Filler Item 21:

Susie has tried a pair of sandals. She'd rather have slippers, so she asked the shopkeeper to ...

- Take the sandals back.
- Take back the sandals.

Filler Item 22:

Harry likes driving his car. When he drives alone, he ...

- Turns the radio on.
- Turns on the radio.

Filler Item 23:

John is very shy. Because of this, he doesn't dare to ...

- Ask Emma out.
- Ask out Emma.

Filler Item 24:

There was a big summer party at the park. All of my friends thought it was warm, but I wanted to ...

- Leave my coat on.
- Leave on my coat.

Filler Item 25:

My cousin arrived late. He experienced some delay, so I had to ...

- Pick John up at the airport.
- Pick up John at the airport.

Filler Item 26:

It was already 11pm, and John wanted to sleep. That is why he asked his roommate to ...

- Switch the light off.
- Switch off the light off.

Filler Item 27:

The family is going through a difficult time. After the funeral, I decided to ...

- Cheer the children up.
- Cheer up the children.

Filler Item 28:

My little sister is really cute. She likes to play in the garden and ...

- Dress her dolls up.
- Dress up her dolls.

Filler Item 29:

There was an awkward moment yesterday. My colleague ...

- Gave the surprise party away by accident.
- Gave away the surprise party by accident.

Filler Item 30:

Julie was so happy when she finally graduated. Her parents could barely ...

- Hold their emotions back.
- Hold back their emotions.

Filler Item 31:

Romy went to the movies yesterday. The new James Bond had just been released.

- Romy really likes the movie
- Romy really liked the movie.

Filler Item 32:

Benjamin is in need of a haircut, but he finds a hairdresser too expensive.

- Therefore he does it himself.
- Therefore he did it himself.

Filler Item 33:

Mary made tea for the kids. The kids were still playing outside so she had to call them.

- Mary hates to see the tea get cold.
- Mary hated to see the tea get cold.

Filler Item 34:

Alex had tidied up the room. It was a complete mess.

- Alex feels really happy with himself.
- Alex felt really happy with himself.

Filler Item 35:

The boys are playing football in the yard. Sundays are always centred around sports.

- The boys really like to play football.
- The boys really liked to play football.

Filler Item 36:

Tom, get in your seat! The principal arrives soon.

- By the way, do these books belong to you?
- By the way, did these books belong to you?

Filler Item 37:

Margaret took my arm, I don't know it happened.

- We dance all night long.
- We danced all night long.

Filler Item 38:

Nick has fallen in love with Cecile. It happened at a conference.

- They bond quickly.
- They bonded quickly.

Filler Item 39:

Sam and Frodo are on an important mission. They have to find a ring.

- It is a difficult task.
- It was a difficult task.

Filler Item 40:

John and his friends are going to a concert. U2 is their favourite band.

- They love their latest record.
- They loved their latest record.

Section 4: Text (finished)

Those were all the sentences! Only a few more questions and you are done.

Section 5: Language questions

Language Question 1:

What is/are your first language(s)?

- Dutch
- Danish
- Other

Language Question 2:

For how many years have you received formal English teaching (including primary school)?

Please write down the number of years.

Language Question 3:

Please rate your spoken written proficiency in English on a scale from 1 (not proficient at all) to 10 (native-like proficiency).

Language Question 4:

Please rate your listening and reading skills in English on a scale from 1 (not able to listen or read in English at all) to 10 (reading and listening in English is as easy as in my native language).

Section 6: Demographic Questions

Demographic Question 1:

What is your gender?

- Male
- Female
- Other

Demographic Question 2:

What is your age in years?

Demographic Question 3:

What is the level of education you are currently enrolled in? If not enrolled in education at the moment, please indicate the highest level of education you have received.

- Primary school
- Secondary school
- High school
- Vocational training (MBO)
- College (HBO)
- University Bachelor (WO)
- University Master (WO)
- Doctorate degree (PhD)
- Other

Section 7: The end

That's it! Thank you for your valuable contribution to our research.

Appendix II: The actual test

Section 1: Introduction

Thank you for participating in this study!

This survey is part of a study about the perception of English sentences by learners of English as a foreign language. The study is carried out by the department of English Language and Culture at the Radboud University in Nijmegen.

Please note that you are only allowed to participate if the following statements are applicable to your situation:

1. You are a native speaker of Danish;
2. You are between 18-30 years old;
3. You study or have studied at university (Bachelor or Master);
4. You have never studied a language or linguistics in your higher education (university-level);
5. You speak English as a foreign language;
6. You do not suffer from dyslexia nor any other reading disability.

Filling out the survey will take approximately 15 minutes. Please fill it out in an environment where you can concentrate. Your responses are completely anonymous. If you have any questions concerning your participation in this survey and/or the outcomes of the study, do not hesitate to contact us.

Participants have a chance to win a \$25 (170DKK) Amazon gift card. If you are interested in this prize, please leave your email address at the end of the questionnaire.

Thank you for your valuable contribution to our research!

Kind regards,

The CWI research team

Contact: bas.slegers@student.ru.nl

Section 2: Explanation test

In the following section, you will be presented with pairs of 2 sentences. Sometimes these two sentences are accompanied by some context sentences. Please choose the sentence of your preference out of each pair. The difference between the sentences may be very small, but nevertheless we ask you to give your preference. Please provide your answers intuitively.

Section 3: Test items

Adverbial Test Items

Adverbial Test Item 1:

- The cats probably sleeps indoors.
- Probably the cats sleeps indoors.

Adverbial Test Item 2:

- Policemen generally acts in tandem.
- Generally policemen acts in tandem.

Adverbial Test Item 3:

- The children typically goes to school at age 4.
- Typically the children goes to school at age 4.

Adverbial Test Item 4:

- The girls fortunately likes candy.
- Fortunately the girls likes candy.

Adverbial Test Item 5:

- The plants actually needs a bit more sunlight.
- Actually the pants needs a bit more sunlight.

Adverbial Test Item 6:

- The boys usually goes to church on Sunday.
- Usually the boys goes to church on Sunday.

Adverbial Test Item 7:

- The employees undoubtedly agrees with this policy.
- Undoubtedly the employees agrees with this policy.

Adverbial Test Item 8:

- Such plans inevitably causes disturbances.
- Inevitably such plans causes disturbances.

Adverbial Test Item 9:

- My daughters hopefully becomes independent women.
- Hopefully my daughters becomes independent women.

Adverbial Test Item 10:

- Ministers normally announces their plans in September.
- Normally ministers announces their plans in September.

Adverbial Test Item 11:

- City buses officially leaves every 10 minutes.
- Officially city buses leaves every 10 minutes.

Adverbial Test Item 12:

- Computers essentially works fast and easily.
- Essentially computers works fast and easily.

Adverbial Test Item 13:

- The actors unquestionably hates each other in real life.
- Unquestionably the actors hates each other in real life.

Adverbial Test Item 14:

- These questions surely makes sense in context.
- Surely these questions makes sense in context.

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- The attacks arguably poses a great threat to the country.
- Arguably the attacks poses a great threat to the country.

Lexicality Test Items

Lexicality Item 1:

The dogs seem to be having a great time. It is raining terribly, but ...

- The dogs loves running around
- They loves running around

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These bacteria easily cause an epidemic. Many people are already struck.

- The bacteria spreads rapidly.
- They spreads rapidly.

Lexicality Item 3:

The trees were planted 15 years ago. The forest looks beautiful now.

- The trees grows taller every year.
- They grows taller every year.

Lexicality Item 4:

Look at the children! The party is a success.

- The children likes candy.
- They likes candy.

Lexicality Item 5:

The women in this town rarely come here. The shopping centre is always empty.

- The women prefers busier places.
- They prefers busier places.

Lexicality Item 6:

The businessmen always seem in a hurry. Wall Street is a good place for making money.

- The businessmen works around the clock.
- They works around the clock.

Lexicality Item 7:

My grandchildren make me feel young again. Not everyone is as lucky as I am.

- My grandchildren visits me every Sunday.
- They visits me every Sunday.

Lexicality Item 8:

The farmers are going through a tough time. The demand for produce grows every year, and...

- The farmers need to work very hard
- They need to work very hard.

Lexicality Item 9:

Those schools normally have strict schedules. The weather is very hot for this time of year, so ...

- The schools closes early today.
- They closes early today.

Lexicality Item 10:

These birds don't like to live alone. It's dangerous in this area, and ...

- The birds needs to feel safe.
- They needs to feels safe.

Lexicality Item 11:

These spokeswomen are very important to our organisation. One mistake can be fatal.

- The spokeswomen needs to tread carefully.
- They needs to tread carefully.

Lexicality Item 12:

These shoes look very good on John. Money is not an issue for him.

- The shoes seems to be made of expensive leather.
- They seems to be made of expensive leather.

Lexicality Item 13:

The tourists take over this park during summer. It's too warm in the sun, so ...

- The tourists claims the spots in the shade.
- They claims the spots in the shade.

Lexicality Item 14:

These cacti are very important to the desert. It's a very rough place, and ...

- The cacti supplies water to the animals.
- They supplies water to the animals.

Lexicality Item 15:

My teeth need a lot of care. Going to the dentist is expensive, but ...

- My teeth looks good now.
- They looks good now.

Filler Items

Filler Item 1:

- The men eat lunch in the cafeteria every day.
- The men eat lunch every day in the cafeteria.

Filler Item 2:

- The cats like to sleep on the sofa at night.
- The cats like to sleep at night on the sofa.

Filler Item 3:

- The bands play in this bar next Tuesday
- The bands play next Tuesday in this bar

Filler Item 4:

- The temperatures are highest by the sea in winter.
- The temperatures are highest in winter by the sea.

Filler Item 5:

- These boats sail to England on Monday
- These boats sail on Monday to England

Filler Item 6:

- Good writers accurately portray their characters.
- Good writers portray their characters accurately.

Filler Item 7:

- My coins suddenly disappear whenever I go out.
- My coins disappear suddenly whenever I go out.

Filler Item 8:

- The icecaps rapidly melt due to global warming.
- The icecaps melt rapidly due to global warming.

Filler Item 9:

- The players briefly pause the game to get a drink.
- The players pause the game briefly to get a drink.

Filler Item 10:

- Book covers slowly fade in the sun.
- Book covers fade slowly in the sun.

Filler Item 11:

- The shop owner wants me to pay immediately
- The shop owner wants me paying immediately

Filler Item 12:

- Look, all the children played with the ball.
- Look, all the children are playing with the ball.

Filler Item 13:

- My grandfather will always regret his decision.
- My grandfather will always regretted his decision.

Filler Item 14:

- The train has already left the station
- The train has already leaving the station

Filler Item 15:

- I expect you to have done this by tomorrow
- I expect you to have do this by tomorrow.

Filler Item 16:

- Nicole is a daughter proud of her mother.
- Nicole is a proud of her mother daughter.

Filler Item 17:

- The children's mother had refused to turn herself in.
- The children's mother had refused to turn himself in.

Filler Item 18:

- The brothers of my father has never visited Boston.
- The brothers of my father have never visited Boston.

Filler Item 19:

- The manager ultimately decides who will do what.
- The manager ultimately decides what who will do.

Filler Item 20:

- Will John be ready to become the new leader?
- Will be John ready to become the new leader?

Filler Item 21:

Susie has tried a pair of sandals. She'd rather have slippers, so she asked the shopkeeper to ...

- Take the sandals back.
- Take back the sandals.

Filler Item 22:

My little sister is really cute. She likes to play in the garden and ...

- Dress her dolls up
- Dress up her dolls

Filler Item 23:

Julie was so happy when she finally graduated. Her parents could barely ...

- Hold their emotions back
- Hold back their emotions

Filler Item 24:

Harry likes driving his car. When he drives alone, he ...

- Turns the radio on.
- Turns on the radio.

Filler Item 25:

My cousin arrived late. He experienced some delay, so I had to ...

- Pick John up at the airport.
- Pick up John at the airport.

Filler Item 26:

It was already 11pm, and John wanted to sleep. That is why he asked his roommate to ...

- Switch the light off.
- Switch off the light off.

Filler Item 27:

Benjamin is in need of a haircut, but he finds a hairdresser too expensive.

- Therefore he does it himself.
- Therefore he did it himself.

Filler Item 28:

Alex had tidied up the room. It was a complete mess.

- Alex feels really happy with himself.
- Alex felt really happy with himself.

Filler Item 29:

The boys are playing football in the yard. Sundays are always centred around sports.

- The boys really like to play football.
- The boys really liked to play football.

Filler Item 30:

John and his friends are going to a concert. U2 is their favourite band.

- They love their latest record.
- They loved their latest record.

Filler Item 31:

The politicians say the war will be over soon. The newspapers reported this.

- I hope if they speak the truth.
- I hope that they speak the truth.

Filler Item 32:

The manager will visit our department today. The company is doing badly.

- I wonder what he will say.
- I wonder what will he say.

Filler Item 33:

The detective finally solved the crime. It was a murder case.

- How did he find the killer?
- How he found the killer?

Filler Item 34:

John did not come home last night. He told his wife he had had an accident.

- She of course not believed him.
- She of course did not believe him.

Filler Item 35:

Harold always turns off the coffee machine before leaving the kitchen. It's an automatism.

- Mary, on the other hand, must always remind herself.
- Mary, on the other hand, must always remind himself.

Filler Item 36:

The neighbours are making a lot of noise today. I was hoping that they would turn down the radio.

- Unfortunately, they just turned up it.
- Unfortunately, they just turned it up.

Filler Item 37:

Martin and Denise have a troubled relationship. It's been bad for a year now.

- She now expects him to leave her.
- She now expects he to leave her.

Filler Item 38:

Two boys and two girls went out to play tennis. The girls had brought their rackets but ...

- The boys had both forgotten to bring them.
- The boys had forgotten both to bring them.

Filler Item 39:

The detective strongly suspected that the butler had killed the lady.

- However, he simply could not find some evidence.
- However, he simply could not find any evidence.

Filler Item 40:

It was Virginia's birthday today. Her father took her to the fair.

- He bought her red three balloons.
- He bought her three balloons.

Section 4: Finished Text

Those were all the sentences! Only one short test and a few questions left.

Section 5: LexTALE

The following part of the test takes around 5 minutes. In each trial, you will see a string of letters. Your task is to decide whether this is an existing English word or not. If you think it is an existing English word, you click on “yes”, and if you think it is not an existing English word, you click on “no”.

Table 4

The LexTale Items (including three dummy items) Incorporated in our Study².

| | | | |
|------------------|-----------------|------------------|-----------------|
| Dummy 1: platory | #14 screech | #30 skave | #46 scholar |
| Dummy 2: denial | #15 savoury | #31 plaintively | #47 turtle |
| Dummy 3: generic | #16 plaudate | #32 kilp | #48 fellick |
| #1 mensible | #17 shin | #33 Interfate | #49 destription |
| #2 scornful | #18 fluid | #34 hasty | #50 cylinder |
| #3 stoutly | #19 spaunch | #35 lengthy | #51 censorship |
| #4 ablaze | #20 allied | #36 fray | #52 celestial |
| #5 kermshaw | #21 slain | #37 crumper | #53 rascal |
| #6 moonlit | #22 recipient | #38 upkeep | #54 purrage |
| #7 lofty | #23 exprate | #39 majestic | #55 pulsh |
| #8 hurricane | #24 eloquence | #40 magrity | #56 muddy |
| #9 flaw | #25 cleanliness | #41 nourishment | #57 quirty |
| #10 alberation | #26 dispatch | #42 abergy | #58 pudour |
| #11 unkempt | #26 rebondicate | #43 proom | #59 listless |
| #12 breeding | #28 ingenious | #44 turmoil | #60 wroughty |
| #13 festivity | #29 bewitch | #45 carbohydrate | |

Done! After the following 7 general questions, you are finished with the questionnaire.

² The words and non-words in Table 4 were presented individually to ensure full focus. Participants could not go back to previous words to change their response(s).

Section 5: Language questions

Language Question 1:

What is/are your first language(s)?

- Dutch
- Danish
- Other

Language Question 2:

For how many years have you received formal English teaching (including primary school)?

Please write down the number of years.

Section 6: Place of residence questions

Place of residence question 1:

Have you ever lived in an English-speaking country? Please only count stays of over 1 month

- Yes
- No

Place of residence question 2 (only displayed if the previous question was answered with “yes”):

Have you ever lived in one of the following areas? Please only count stays of over 1 month.

- Northern England (Cheshire, Cumbria, County Durham, Yorkshire, Manchester, Lancashire, Merseyside, Northumberland, Tyne and Wear, or Lincolnshire)
- Scotland
- Belfast
- Appalachian mountain region, USA (western Pennsylvania, West Virginia, eastern Kentucky, eastern Tennessee, northern Alabama, or northern Georgia)
- Not applicable

Section 7: Demographic Questions

Demographic Question 1:

What is your gender?

- Male
- Female
- Other

Demographic Question 2:

What is your age in years?

Demographic Question 3:

What is the level of education you are currently enrolled in? If not enrolled in education at the moment, please indicate the highest level of education you have received.

- Primary school
- Secondary school
- High school
- Vocational training (MBO)
- College (HBO)
- University Bachelor (WO)
- University Master (WO)
- Doctorate degree (PhD)
- Other

Section 8: The end

That's it! Thank you for your valuable contribution to our research. If you are interested in winning a \$25 (170DKK) Amazon gift card, please leave your email address here. For questions and/or comments about this survey, please contact us at bas.sleegers@student.ru.nl