The Northern Subject Rule:
Studying the Type of Subject effect in Native Dutch speakers.

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3 October 2020

Abstract

The current study was designed to see whether advanced Dutch speakers of English show a sensitivity towards the Type of Subject constraint of the Northern Subject Rule (NSR). The NSR is a morphosyntactic phenomenon which allows for an -s on the verb in a third person plural context. This study only used irregular plural subject items because these items do not end on an -s. It could be argued that there is possible rhyming effect with regular plural items as both the verb and subject end on an -s. If Dutch learners show a sensitivity towards the Type of Subject-constraint, it cannot be due to the input they received but innate principles could be at work. A pre-test was needed so that the experimental test was unbiased. The unbiased pre-test was used for the experimental test. Both tests had two possible answers for the participants to choose from: one sentence with the Type of Subject constraint and one sentence without. The pre-test did not contain the -s on the verb which marks the NSR. The results suggest that Dutch learners show no significant preference for the Type of Subject constraint but show a step in the right direction.

Keywords: Northern Subject Rule, Type of Subject constraint, Poverty of the Stimulus, second language acquisition, constraints without input.

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1. Introduction

There is an ongoing debate in linguistics about the question whether or not people are born with innate knowledge about language. The Nativists argue that people are born with innate knowledge about language and that all this knowledge cannot be retrieved from input only. The input is not rich enough. The Constructivists, on the other hand, suggest that people learn language through the input they receive. The acquisition of languages and whether or not people are born with innate knowledge is often tested using children, like Leddon & Lidz (2006) did. They found that children had acquired "quite a complex system" while they had almost no sentences in their prior input that gave them the knowledge on how to interpret these sentences. There are several studies that tried to show that people have certain grammatical knowledge without having learnt this before through input, and are governed by general underlying principles (e.g., Hoendervangers, 2016; Sleegers, 2017; Barbiers, Bennis & Hendriks 2018; Wilms, 2019; Freriksen, 2019). It could be plausible that this grammatical knowledge, governed by innate principles, are then part of something bigger like universal grammar (UG). UG could be the innate knowledge a person is born with.

The Northern Subject Rule (NSR) is a morphosyntactic phenomenon present in Northern English dialects and is also found in dialects such as Belfast English (Henry, 1995) and Appalachian English (Tortora & Den Dikken, 2010) which allows for an -s ending on the verb in third person plural contexts. In Standard English only a zero-ending is grammatical when the subject is a lexical plural. The NSR consists of two constraints: the Type of Subject (TS) constraint and the Subject Adjacency (SA) constraint[1].

The TS-constraint entails that the verb can receive an -s ending when the subject is a lexical plural, but not when the subject is pronominal (de Haas & Kemenade, 2015; Tortora &

[1] TS and SA 'constraint' and 'effect' are used interchangeably.

den Dikken, 2010; Pietsch, 2005; Henry, 1995). The SA-constraint states that the verb can receive an -s ending when the subject is pronominal, and an adverb is in between the subject and verb. When the pronominal subject and verb are adjacent, the verb does not receive an -s. Examples can be found in (1) below.

(1) a. *They sings[2].

b. The girls sings. TS

c. They often sings. SA

There are several different studies that used the NSR. Hoendervangers (2016) tested participants to see if they showed a sensitivity towards the grammatical feature without prior knowledge about it. She studied native speakers of English and Dutch learners of English and performed a ranking task. Participants had to rank four sentences on grammatical acceptability. The results showed a significant effect that indicated that participants adhered to the NSR rules even though they were not present in their input. Her methodology was not as reliable since she designed test items that contained both the TS and SA-constraint. That both constraints were presented in one test item was the dominant issue in her test, since it is difficult to argue which constraint causes this effect. That is why Sleegers (2017) tried to replicate her results with a different group of participants. He tested Danish speakers and also found a significant effect towards the NSR. No finalised replication was made with Dutch or English participants so Wilms (2019) and Freriksen (2019) decided to test these groups of participants. The current study builds upon these studies.

Wilms (2019) and Freriksen (2019) used the NSR in their experiments and both tested a different group of participants that never heard of the NSR and its constraints before. They

[2] An asterisk is an indication of ungrammaticality.

tried to explain that UG is necessary to explain some of the grammatical knowledge people have outside of the knowledge retrieved from their input. Wilms (2019) tested native speakers of English and Freriksen (2019) tested advanced Dutch speakers of English. Their results were that the participant groups of both researches showed a sensitivity towards one of the features of the NSR: the Type of Subject (TS) constraint. They suggested that this sensitivity towards a rule of the NSR, without ever having learnt anything about it, could be due to innate principles. The current study used Wilms (2019) and Freriksen (2019) as an inspiration and examined if this effect for the TS-constraint would uphold when only irregular plural items are used. It could be argued that there was an effect in previous research for regular plural subjects because of a rhyming effect. Both the regular subject and the verb then ended on an -s. This rhyming effect could possibly be a reason why participants choose that option and not because of their innate knowledge about the NSR. The current research tested advanced Dutch speakers of English, because the effect did not uphold for irregular plurals here for Freriksen (2019). Wilms decided to ran t-tests on the results of both experiments again and found that the effect for irregular plural remained in her study. This however was not the case for the irregular plurals in the experiment from Freriksen (2019). If the Dutch participants in this study show a sensitivity, this could be due to innate knowledge. This study examined whether or not advanced Dutch speakers of English, who have not heard about the NSR and its rules, are sensitive to the TS-constraint with only irregular plural subjects. They were tested to see if they preferred sentences that adhered to the TS-constraint over sentences that violated the constraint. If the participants show a sensitivity to this constraint, the grammatical knowledge that the participants then show could be due to innate principles since they had not heard of this before. This could contribute more to the results of Wilms (2019) and Freriksen (2019) and contribute to the argument in linguistics.

This thesis tries to answer the following research question: how do native Dutch speakers rank sentences either adhering to or violation the TS-constraint of the NSR using only irregular plurals, while having had no input of this kind? If it is the case that advanced Dutch speakers of English show a sensitivity towards the NSR related TS-effect without having any input of this, this research supports that the NSR and its constraints are not learned through input but governed by innate grammatical knowledge.

The remainder of this thesis is structured in the following way: Section 2 discusses past research and how this research improves the research that has been done on the NSR. Section 3 explains how the methodology of this study is designed and Section 4 discusses its results. Sections 5 provides a general discussion and Section 6 concludes the thesis.

2. Past research

This section discusses the past studies that were concerned with the Poverty of the Stimulus argument and the Northern Subject Rule (NSR) and that are pivotal to the current study. Section 2.1 provides an overview of the Poverty of the Stimulus (POS) argument. Section 2.2 gives insight in the NSR and section 2.3 discusses the studies that led to the current study. All studies provided results that are of importance to the current study. Finally, 2.4 thoroughly discusses the research conducted by Wilms (2019) and Freriksen (2019) that laid the foundations for this study and 2.5 describes the core of the current research.

2.1 The Poverty of the Stimulus Argument

There is an ongoing debate in linguistics about the way grammatical knowledge is obtained and this study tries to contribute to it. There are two different accounts within this argument: the Nativist account and the Constructivist account. The latter believes that grammatical knowledge is retrieved from the input only, whereas the nativists believe that there are innate principles that cooperate with the input to produce grammatical utterances. The Poverty of The Stimulus (POS) argument is part of the Nativists who argue that children are not exposed to enough data (e.g. the data is not rich enough) within their environment to acquire all the grammatical knowledge they possess. They suggest that this grammatical knowledge is built up out of innate knowledge and knowledge acquired through input from someone's environment. The acquisition of a language has particularly been tested with and linked to the language acquisition of children. The Nativists suggest that children can form sentences that contain abstract grammatical structures that they cannot have learnt yet from the input alone. This approach falls in the line with Chomsky's idea of Universal Grammar (UG), a concept from the 1960s. This is the idea that a person is born with innate rules about language and its grammar.

An example of a study in child acquisition in the debate about the Poverty of the Stimulus argument is one by Leddon & Lidz (2006). They showed several sentences to participants that focussed on predicates and reflexive pronouns. They focused on the reconstruction and interpretation of sentences by children. Reconstruction is needed when the displaced constituent is a predicate but not necessarily when it is an argument. (2) and (3) below show an example of both types of sentences as found in Leddon and Lidz (2006).

(2) Sentence with a predicate, reconstruction is necessary

Mr. Monkey$_1$ figured out how proud of himself$_{*1/2}$ Andy$_2$ was__.

(3) Sentence with an argument, reconstruction is optional

Miss Cruella$_1$ knew which paining of herself$_{1/2}$ Janie$_2$ put up__.

(Leddon & Lidz, 2006)

The difference between the predicate and argument is the place where the antecedents of the reflexive pronouns can be. These are indicated with the indices. In sentence (2) reconstruction is needed because the first option ('himself' referring to 'Mr Monkey') is not the correct option. In sentence (3) reconstruction is not needed because both 'Miss Cruella' and 'Janie' can refer to 'herself'. Adults and children differ where adults show a preference for the interpretation of 'herself' referring to 'Janie' in sentence (3) and children prefer the option closer to the reflexive 'Miss Cruella'. With the predicates, however, children did not show a different judgement to the adults. Their judgement clearly showed that they had the knowledge to correctly reconstruct sentences with misplaced predicates. This result was remarkable since the input the children received contained none to barely no sentences that contained these

complex reconstructions (Leddon& Lidz, 2006). This study, thus, found evidence in favour of the POS and indirect evidence in favour of UG. The research by Leddon & Lidz (2006) was one amongst others in the nativist camp in studies about the POS. The other camp consists of the constructivists. They believe that the input that is received during childhood is enough to build up the entire grammatical system of someone (Elman; 1993, as cited in Rowland; 2014).

2.2 The Northern Subject Rule

The Northern Subject Rule (NSR) is a morphosyntactic phenomenon that occurs in the Northern dialects of British English. The NSR dialects allows an -s on the verb not only when the subject is third person singular, as in Standard English, but also in third person plural contexts. Both the Type of Subject constraint (TS) and Subject Adjacency (SA) constraint determine when the verb is marked with an -s or ∅.

The TS-constraint states that the verb can receive an -s on the verb when the subject is plural and lexical (de Haas & Kemenade, 2015; Tortora & den Dikken, 2010; Pietsch, 2005; Henry, 1995). Example sentences can be found in (4) below. In sentence (4a) the subject is pronominal which makes the sentence ungrammatical. When the subject is nominal as in sentence (4b), the -s on the verb makes the sentence grammatical according to the TS-constraint. Sentence (4c) shows the sentence according to Standard English with a pronominal subject with a ∅-ending on the verb. This however is grammatical in NSR-dialects too.

(4) a. *They sleeps.

b. The children sleeps.

c. They sleep.

The SA-constraint states that the verb can receive an -s when the plural subject and verb are not adjacent to each other, separated by an adverbial (de Haas & Kemenade, 2015; Tortora & den Dikken, 2010; Pietsch, 2005; Henry, 1995). Examples are shown in (5) below. Sentence (5a) is ungrammatical because the subject is pronominal and therefore cannot receive an -s on the verb. Sentence (5b) is grammatical because the subject and the verb are not adjacent because of an intervening adverbial and therefore an -s on the verb is grammatical. Sentence (5c) again shows the grammatical sentence in standard English that is grammatical in NSR-dialects as well.

(5) a. *They sleeps

b. They often sleeps

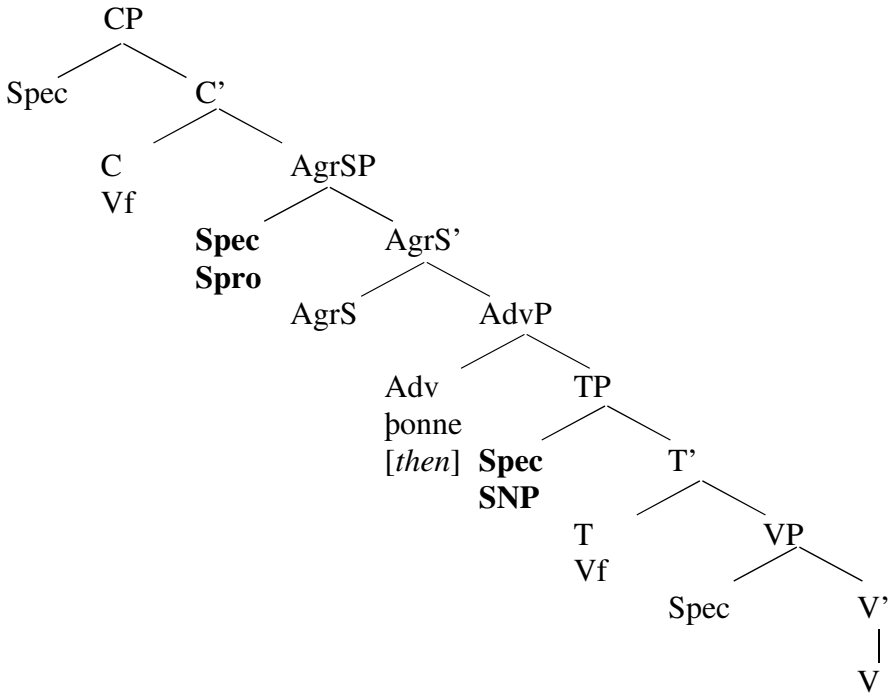
c. They often sleep.

These NSR dialects are found in the East and West Midlands, East of England, South East and South West of England (de Haas & Kemenade, 2015). The origins were researched in a corpus study on Middle English. De Haas & Kemenade (2015) found that the NSR pattern originated in Yorkshire and is stronger in the dialects from Northern England than from the Midlands. This is probably also why its name is coined as the Northern Subject Rule. They also found that the TS-constraint is more likely to form the basis of the NSR, because the SA-constraint was weaker and often even absent. They found evidence for this in East Midlands texts: *Oxford, Merton College MS 248 (Merton248)*, *London, Dulwich College MS XXII (Dulwich)* and *Havelok* (de Haas & Kemenade, 2015, 62).

The adjacency of the adverbial to the subject was found in the dialects from the northern part of England and not that much in the southern dialects at the stage of the language they tested. These southern dialects did show evidence of different positions where

the subject could sit in a sentence which related to the TS-constraint of the NSR dialect. Since the subject condition is likely to be at the core of the NSR, it led to the conclusion that differential subject positions are of crucial importance to the NSR. The term 'differential subjects positions' refers to the fact that the subject can sit in two different derived positions in a sentence. Evidence for this was found in Old and Middle English by de Haas & van Kemenade (2015) when they looked at the possible combinations of subject and negation or subject and adverbial. The subject can be situated either above or below the negation or adverbial. This was seen as evidence for differential subject positions. The syntactic tree structure of a sentence with multiple subject positions can be found in (6) below.

(6)



(de Haas & Kemenade, 2015, 64, emphasis added)

The tree-structure in (6) shows that the two subject positions are Spec-AgrSP and Spec-TP. The pronominal subject (Spro) is situated in the highest position and the nominal subject (SNP) in the lower position. These two subject positions can possibly explain the morphosyntactic constraints found in the NSR.

There are other dialects that have showed similar patterns to the NSR. Tortora & den Dikken (2010) conducted a study about subject-verb agreement in the dialects of Belfast English and Appalachian English. Both dialects showed similarities to the NSR with a third person plural that allows for an -s on the verb. They also stated that the subject can be positioned in different places in the sentence. This allowed the possibility of two different inflections for the third person plural, as de Haas & Kemenade (2015) did find for the NSR as well. Data retrieved by Henry (1995) from Belfast English showed similar evidence to features of the NSR. She named the differences between Belfast English and Standard English and came to a similar conclusion. Belfast English also showed different inflections and positions for the subject. These differences comprised features in the syntax of the two varieties of English, but there is one that stands out in the light of this research, namely singular concord. She discussed this phenomenon in Belfast English, where a singular 3rd person -s can occur on the verb when the subject is coordinated and plural. It also said that when an adverb intervened the same occurred, what then again coincided with the other constraint: the SA-constraint.

Like the POS argument, the NSR dialect can be examined from the nativist camp or the constructivist camp. A constructivist study like Pietsch (2005) wanted to prove that the NSR rules could be familiar to someone who did not speak this dialect with the use of the frequency of word combination between a subject and verb. Constructivists believe that all grammatical knowledge is retrieved from input. He argued that the frequency of word combinations (subject and verb) were the cause why pronominal subjects were only used in the third person plural context. Pronominal subjects are more frequent because of their small number and high frequency of occurrence. This higher frequency played a vital role in a scheme of general rules and lexically specific rules. When the frequency is high, it is more likely to follow the general rule and lead to a -∅/-e/-n ending (Pietsch, 2005). Nominal

subjects are less frequent because they are a bit larger and have more options, which lead to more combinations of nouns and verbs and result in lexically specific rules.

The TS-constraint has been explained by Pietsch (2005) in the way that nouns are freer in their inflection options than pronouns. This is the result of the lower frequency that nouns have in the scheme. For the SA-constraint, he argued that the subject and verb are more frequent when they are adjacent, than when they are not adjacent. Pietsch (2005) took this as a general rule in the scheme, because of the high frequency of this combination. When an adverbial then intervenes, as is the case with the SA-constraint, the general rule is violated and the abstract rule is followed with a third person singular verb ending as the result. Where Pietsch (2005) is an example of research in the NSR from the constructivist camp, the following section discusses several studies from the nativist camp.

2.3 Barbiers et al. (2018), Hoendervangers (2016) and Sleegers (2017)

The following section discusses several studies that are of importance to the current study. They looked at the core of grammatical structures that someone can have an intuition or sensitivity towards without having learned these through input before. These researchers each complemented each other in their research subjects and added further information to the argument. The study of Barbiers et al. (2018) argued that the input a person receives is not rich enough for all the linguistic knowledge someone has. It served as the inspiration for the studies by Wilms (2019) and Freriksen (2019) who were the inspiration for the current research.

The study by Barbiers et al. (2018) looked at Dutch verb clusters and tested native speakers of Dutch. They looked at the word order of Dutch verb clusters in embedded clauses that differ per region in the Netherlands. The logically possible orders of these verb clusters can be found in (7) as they were mentioned in Barbiers et al (2018).

(7) a. Moet kunnen zwemmen (V1-V2-V3)

b. Moet zwemmen kunnen (V1-V3-V2)

c. Kunnen zwemmen moet (V2-V3-V1)

d. Zwemmen kunnen moet (V3-V2-V1)

e. Zwemmen moet kunnen (V3-V1-V2)

f. Kunnen moet zwemmen (V2-V1-V3)

(Barbiers et al, 2018)

The participants had to perform a forced ranking task with the six possible orders as shown in (7). They had to rank the sentences on acceptability. The sentences were all semantically similar, so the expectation was that the participants would rely on the orders that were common in the area where they lived. The results were that all participants had ranked the logical possibilities in a similar order despite the input from their surroundings. Since their expectation was not met, this research showed that one does not only rely on the knowledge they are familiar with. The results showed that they choose similar orders even though the participants did not all come from the same area in the Netherlands. They choose according to their intuition on grammar instead of the knowledge followed from their input. It could be argued that someone's grammatical knowledge extends beyond the input they receive.

Hoendervangers (2016) examined the POS argument too. She tested native English speakers and Dutch learners of English with regard to the NSR. The NSR-constraints were incorporated in the items, either both the TS- and SA-constraints, separately or not at all. This resulted in 4 sentences per test item. An example of one the test items can be found in (8) with the different combinations:

(8) a. The dogs loves treats. (TS+/SA-)

b. The dogs really loves treats. (TS+/SA+)

c. They really loves treats. (TS-/SA+)

d. They loves treats. (TS-/SA-)

The results where that both native speakers of English and Dutch speakers ranked the condition in (8b) the highest. The participants favoured the nominal subject over the pronominal subject and sentences with a non-adjacent subject over an adjacent subject. Both groups also ranked the condition in (8d) without any of the constraints from the NSR the lowest. After the experiment, Hoendervangers (2016) found an effect for both the TS-constraint and the SA-constraint. Both groups of participants showed an effect in the experiment with some slight differences in the rankings.

When this study was finished, there were some points that could be improved upon. Hilten (2017) decided to take another look at this topic and some limitations in set-up and materials with regard to Hoendervangers' (2016) research were found. Hilten (2017) argued that there were three limitations that needed to be adapted in the test to make it usable in the argumentation regarding the POS. There, however, could have been other factors, besides the TS- or SA-constraint, that played a role.

The first limitation was the position of the adverbials. This placement is quite strict in English and depends on what adverbial is used. It may have been the case that participants preferred an adverbial in medial position because it was less common in an initial position, regardless of the consequences it had on the subject verb adjacency (Hilten, 2017). This problem was solved by adding a pre-test to be able to see which items were suitable for the

test. The pre-test ensured that there was no initial bias towards either position of the adverbial. If there was a different result, this would actually be because of the SA-constraint.

The second limitation was that most lexical subject in the items were regular plural subjects which could have influenced the outcome as well. Since all regular plural subjects in Standard English end with an -s and all verbs used in the test also ended with an -s a rhyming effect was possible. Consider sentence (9) and (10).

(9) The dogs seem to be having a great time. It is raining terribly, but …
- The dogs loves running around
- They loves running around

(10) These bacteria easily cause an epidemic. Many people are already struck.
- The bacteria spreads rapidly.
- They spreads rapidly.

The subject *'the dogs'* in sentence (9) is a regular plural subject that ends on an -s like the verb in both options. Participants may have preferred a lexical subject because of this effect and the phonological and orthographic similarities between the inflection on subject and verb (Hilten, 2017). With an irregular subject like *'the bacteria'* in (10) this would not occur. This problem was solved with the addition of new stimuli and more irregular plural subjects were included.

The last limitation had to do with the subjects that were used in the test. Participants may have preferred 1 and 2 over the other two sentences because of the lexical subject that carried more information than a pronominal subject. A possible solution for this problem was splitting up the two constraints in two separate types of items: TS-items and SA-items. Both

items now contained two sentences that needed to be ranked and allowed for Hilten (2017) to focus more on the type of subject. For Hilten's (2017) study only advanced Dutch learners of English were tested and the results showed no significant bias towards the TS-constraint or the SA-constraint in the actual test. The conclusion thus was that native Dutch speakers were not sensitive to the NSR and its constraints.

Another study was conducted as a replication of the study by Hoendervangers (2016) with a different group of participants. Sleegers(2017) decided to research whether the constraints of the NSR had an effect on speakers of Danish since this language does not have subject-verb agreement. Hoendervangers (2016) tested participants that spoke English or Dutch as a first language. These languages both have subject-verb agreement. This could be a possible explanation for their intuitions that showed a sensitivity towards the NSR. Sleegers (2017) changed the experiment to a grammaticality judgement task. He argued if speakers of Danish did show a sensitivity towards the NSR-constraints that these principles are governed by innate grammar. This evidence brought more to the argument since the possible effect of the verbal agreement system in Dutch and English is not present in Danish. This effect must then be more abstract. Sleegers (2017) indeed found that the Danish speakers showed an effect to both the TS-constraint and the SA-constraint.

Sleegers (2017) also found flaws in the methodology of the study conducted by Hoendervangers (2016). He argued for the use of context sentences, since participants are likely to choose lexical subjects over pronominal subjects. Pronominal subjects need information to refer back to. This information is introduced through context sentences. Another issue was that the test designed by Hoendervangers (2016) did not contain filler items to distract participants from the goal of the study.

2.4 Wilms (2019) and Freriksen (2019)

The studies by Barbiers et al. (2018), Hoendervangers (2016), Hilten (2017) and Sleegers (2017) laid the foundations for the studies by Wilms (2019) and Freriksen (2019). They delved even further into the subject and both designed similar tasks; a pre-test and actual test. Both wanted to find out if speakers who had never heard of the NSR were sensitive to its rules. Wilms (2019) and Freriksen (2019) designed for their research to be an extension of previous research conducted by Derksen & Nederveen (2018). Their research was yet another extension upon the research by Hilten (2017). She mentioned that the results of her pre-test needed to be improved to an unbiased result.

Both Wilms (2019) and Freriksen (2019) started their experiment with a pre-test and the actual test followed. This pre-test is needed to ensure that there is no strong bias towards either of the conditions (lexical or pronominal subjects). The pre-test had the same format as the actual test but not with the -s added on the verb yet. A bias in the test meant that one of the two options (lexical of pronominal subject) is preferred by the participants. If there already was a strong bias in the pre-test towards one of the conditions, it would have had an effect on the result of the actual test. It would then be harder to prove that there is a preference towards the TS-constraint or SA-constraint. This is why the pre-test is pivotal. If someone can choose between two options, there is always the possibility that it is a random choice. The pre-test needed to be set at an average of $M = 0.5$ as much as possible, so that the actual test can significantly differ in the predicted direction of higher than $M = 0.5$. This average of $M = 0.5$ meant that the participants do not prefer one condition over the other. If the pre-test had a lower average and the actual test had an average of $M = 0.5$, than it could have been the case that participants choose at random. After this pre-test, a selection is made of the sentences so that there is no significant overall bias. The pre-test they used was taken from earlier research

by Derksen & Nederveen (2018), though only for the SA-constraint. The test-items were followed by questions about their gender, age and education.

They also introduced context sentences that introduced the test items. Context sentences were used that were then followed by the two options from which participants had to choose. The context sentences were needed to give participants the possibility to choose a lexical subject. The lexical subject carries more information, whereas the pronominal subject needs information to refer back to. That is why these context sentences were added to both tests in the stimuli. These two sentences of context provided the participants with information about the subject and introduced it. Consider the sentences shown in (10), (11) and (12) below without context and with one or two context sentences taken from Wilms (2019). A second context sentence is always needed, because the two lexical subjects will otherwise follow each other. If the two lexical subjects would follow each other, participants would be more likely to choose the pronominal subject. Consider sentence (11) for this. If there is only one context sentence, which already contained the lexical subject, one could possibly choose the pronominal subject over the lexical subject in the options. The lexical subjects otherwise follow each other in the subsequent sentences.

(11) No context information.

- The firefighters know what to do.
- They know what to do.

(12) The firefighters have to act quickly.

- The firefighters know what to do.
- They know what to do.

(13) The firefighters have to act quickly. The shopping centre is on fire, but luckily…

- The firefighters know what to do.
- They know what to do.

Wilms (2019) tested native speakers of English. The pre-test resulted in an unbiased test for the TS-constraint, whereas some sentences with the SA-constraint had to be disregarded to end up with an unbiased test. The sentences that were disregarded either leaned greatly towards the lexical subject or towards the pronominal subject. When these outliers were not taken into account with the statistics, it resulted in an unbiased test.

When both resulted in an unbiased test, she conducted the second tests. Now that the test was unbiased, it could be distributed with the NSR -s ending on the verb to the participants. The results of the actual tests were $M = 0.62$ for the TS-constraint and $M = 0.42$ for the SA-constraint and showed a significant effect for the TS-constraint. The participants did show some sensitivity towards the NSR. There was a significant bias towards the TS-constraint when the participants did not have prior knowledge about the NSR. There however was no significant effect for the SA-constraint.

Freriksen (2019) tested Dutch advanced speakers of English. Her pre-test resulted in an average of $M = 0.50$ after some items were deleted. The results of the second tests by Freriksen (2019) showed a similar outcome to Wilms (2019). For the TS-constraints, the participants showed a significant effect between the pre-test and the actual test ($M = 0.61$). This, however, was not the case with the SA-effect ($M = 0.45$). The effect was not significant here, and the participants leaned more towards the sentences that did not contain the SA-effect. In these sentences the subject and verb were not intervened by an adverbial.

Both these studies showed that the participants only showed a sensitivity towards the TS-effect and partially answered their research questions. It was already said that the TS-constraint was the basis of the NSR and not the SA-constraint (de Haas & Kemenade, 2015, 62). This could be the reason why the participants only showed a sensitivity towards the TS-constraint in both studies. It did show a sensitivity towards the TS-constraint without this being present in the input. These participants had never received any knowledge about the NSR and its grammatical rules prior to participating in this study. They had to rely on their instincts to judge the sentences in the tests. The averages $M = 0.62$ (Wilms, 2019) and $M = 0.61$ (Freriksen, 2019) leaned towards the lexical subjects instead of the pronominal subjects in the TS-constraint. There was a significant effect present here. This sensitivity towards the Type of Subject constraint by both native English speakers and Dutch advanced speakers of English was the starting point of the current research. A previous study (de Haas & Kemenade, 2015) argued that the most stable factor of the NSR is the TS-constraint and probably at the base of the NSR dialect. So, it could be a possible explanation as to why the participants of both studies show no sensitivity towards the SA-constraint.

2.5 Rhyming effect

The current study focussed on the question if Dutch advanced speakers of English show a sensitivity towards the TS-constraint of the NSR. It provided a detailed analysis of irregular plural subjects in the pre-test and actual test for the TS-constraint. These subjects were chosen to avoid a possible rhyming effect. The regular plurals that both studies by Wilms (2019) and Freriksen (2019) had used in their tests ended on an -s and the verb also got an -s according to the NSR rules. This could possibly have resulted in an effect that participants could see as rhyming. This argument was already mentioned before as a flaw by Hilten (2017) and Sleegers (2017) in the methodology of Hoendervangers (2016). One could argue that

participants had chosen the NSR option in the test simply because it sounded better due to the rhyming effect. An example is shown in (14) below from the actual test from Wilms (2019).

(14) The puppies are very enthusiastic. My brother is a great lover of animals.

- The puppies plays all day long.
- They plays all day long.

As seen in (14) both the lexical subject '*the puppies'* and the verb '*plays'* end on an -s. This could have caused a rhyming effect in the sentence and could be the reason why participants would prefer the lexical subject over the pronominal subject. Consider (14) in comparison to (15) where the lexical subject is irregular and does not end on an -s.

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

- The bacteria spreads rapidly.
- They spreads rapidly.

After finishing her research, Wilms decided to run the statistics on her test items for the TS-constraint for the regular and irregular plural separately. The significant effect remained for the irregular plural with an average of $M = 0.62$ and $p < 0.05$. This effect did not hold for the irregular items in the test from Freriksen (2019). The current research will examine if this effect with Dutch advanced speakers of English remains.

Since this current research focussed on only one specific sort of test items, the facts that Henry (1995) mentioned about different types of coordinated subjects are of importance and one in particular. The possibilities for irregular plural test items are not endless and therefore other options must be considered too. The key with these test items is to ensure that

the plural subjects that are used in the sentences do not have an -s ending on the subject. Data showed occurrences where the NSR was grammatical with coordinated subjects (Henry, 1995, 39). An example of this phenomenon can be found below in (16). She also found that singular concord is only grammatical in the instances where there was no nominative pronoun present. This is why (16a) is ungrammatical and (16b) grammatical.

(16) a. *John and he goes away up the road.

b. John and him goes away up the road.

Two other groups of irregular plurals are be used in the test as well. There is a group of general irregular plural like '*the sheep', 'the men'* and '*the women'* etc. and a group of irregulars that are used to describe a greater group of people like '*the elderly'* for example. These three groups of plural subjects that do not end on an -s form the subjects of the test items for this research. An example of a test item of each subject group can be found below in (17), (18), and (19).

(17) Test item coordinated subject

Evi and Noah seem to be having a great time. The weather outside is cold and it rains terribly, but…

- Evi and Noah loves running around.
- They loves running around.

(18) Test item general irregular plural

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

- The bacteria spreads rapidly.

- They spreads rapidly.

(19) Test item irregular that describes a group

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

- The needy prefers busier places.
- They prefers busier places.

3. Methodology

The current study is an extension of previous research by Freriksen (2019). It used a pre-test and actual test like former studies, but some changes were made to both tests. The changes were made because the current study used different subjects from previous studies. Freriksen (2019) only had one condition for the subjects of her stimuli: they had to be lexical plurals.

Studies by Wilms (2019) and Freriksen (2019) used plural subjects that, in some cases, ended on an -s. An example is shown below in (20) from the test with the TS-constraint variable from Wilms (2019)

(20) The firefighters have to act quickly. The shopping centre is on fire, but luckily...

A. The firefighters knows what to do.

B. They knows what to do.

The option in example (20) that has the TS-condition in it, is option A here. This option shows that the subject *'the firefighters'* and the verb *'knows'* both end on an -s. The expectation was that the participants would prefer option A. This was also the case with the studies conducted by Wilms (2019) and Freriksen (2019). The question, however, remained if participants preferred this option over the pronominal subject, option B, on their implicit knowledge about the TS-constraint or something trivial. One could explain that participants might have preferred the lexical subject over the pronominal subject because of a rhyming effect. This effect in option A may sound better than option B. Both the lexical subject *'the firefighters'* and the verbs *'knows'* end on an -s, which could cause a rhyming effect for the participants. To avoid participants choosing the option where the verb ends on an -s (the TS-condition), this study chose to use subjects that do not end on an -s.

Before the actual test is conducted, a pre-test is needed for the research. This pre-test is needed to ensure that there is no strong bias towards either of the conditions (lexical or pronominal subjects). The pre-test has the same format as the actual test but does not have the -s added on the verb yet. A bias in the test means that one of the two options (lexical of pronominal subject) is preferred by the participants. If there already was a strong bias in the pre-test towards one condition, it effected the result of the actual test. It is then harder to prove that there is a preference towards the TS-constraint. That is why the pre-test is pivotal. If someone can choose between two options, there is always the possibility that it is a random choice. The pre-test needed to be set at an average of $M = 0.5$ as much as possible, so that the actual test can significantly differ in the predicted direction of higher than $M = 0.5$. An average of $M = 0.5$ was chosen here because this meant that the participants then do not favour either of the conditions. If the pre-test had a lower average and the actual test had an average of $M = 0.5$, than is could have been the case that participants choose at random. After this pre-test, a selection was made of the sentences so that there is no significant overall bias. This chapter gives a detailed description of the pre-test and actual test. Note that the tests are taken from the previous study by Wilms (2019) and Freriksen (2019) and were slightly adapted to fit the condition of the current research. This change was found in the subjects that were all irregular plural subject in the current research where Wilms (2019) and Freriksen (2019) used regular plural subject as well.

3.1 Materials

The pre-test contained a total of 20 stimulus pairs with a TS-variable and lexical subjects from one of the three subject groups. These three groups had one thing in common that set them apart from previous researches, namely that they all do not have a plural -s ending. This prevented participants from preferring the option where both the verb and subject have an -s

ending as mentioned before. The three different groups of subjects were irregular plurals, coordinated subjects and plural subjects that described a group like the rich, the poor etc. All 20 items were made up of one or two context sentences. These sentences were then followed by two options: a lexical or pronominal subject. The stimulus pairs did not yet have an -s added to verb, since this was not the actual test. Consider the examples from each subject group in (21), (22) and (23) below. All items in the pre-test were coded. The irregular plural items were coded as PL-IP-(…), the coordinates subjects as PL-CS-(…) and the plural subjects that describe a group as PL-G-(…) and the filler items as PL-F-(…).

(21) PL-IP-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.

(22) PL-CS-2

Evi and Noah seem to be having a great time. The weather outside is cold and it rains terribly, but…

- Evi and Noah love running around.
- They love running around.

(23) PL-G-6

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

- The rich prefer busier places.
- They prefer busier places.

The pre-test also contained 20 filler items with small differences in word order or tense. These were added to distract from the actual purpose of the test. The filler items were comprised of two different types. One type of filler contained phrasal verbs and participants had to choose where the preposition or adverbs fitted in the sentence. The second type of filler had the option between two different tenses. These decisions were difficult in some cases and simple in others. The options sometimes both were grammatical or ungrammatical. The test and filler items were randomised so that the participants did not receive the test items first and filler items afterwards.

After the test and filler items some questions had to be filled in to check if the participants actually met the requirements of first language and language education. They also had to fill in their age and gender for the overall participant overview. This information is required to give an overview of the age range of the participants and their gender. There was also a question added about studies or stays abroad, since this could also influence the outcome if a participant had stayed in one of the areas where the NSR is present. The participants also needed to rate their proficiency in the English language and their skills in reading and writing. This rating helped to assess their level of knowledge in the English language. Both tests were designed in Qualtrics (Qualtrics, Provo, UT, 2005).

After these few questions a standardised proficiency test, LexTALE. This was added to check what the English proficiency of each participant actually was, since they could have overestimated or underestimated themselves. LexTALE (www.lextale.com) stands for *Lexical Test for Advanced Learners of English* and was created by Lemhöfer and Broersma in 2012. It was designed as a word-recognition task where the participants have to answer whether the word that is shown, is a word or non-word. If a participant scored low (meaning a score of 40% procent or lower) on the LexTALE test, their results might be disregarded due to a low proficiency.

The test was built in the same way as the pre-test. The main difference here was that the sentences that showed the TS-variable now had the -s ending added to the verb. The structure of the stimuli and their presentation remained the same as with the pre-test. It contained a main sentence, context sentences and then two options with either a lexical or pronominal subject. The test again contained 20 filler items too. The items for the test were also coded. T-IP_(…) for the irregular plural items, T-CS-(…) for the coordinated subject items and T-G-(…) for the plural items that describe groups. The filler items were coded with T-F-(…).

3.2 The participants

Two different groups of participants were part of the tests. The average age and their gender of the participants per test can be found in Table 1.

Table 1: *Average age and gender of the participants*

	N	Male	Female	M_{age}
Pre-test TS	20	4	16	28.4
Test TS	30	14	16	21.9

All participants were between the ages of 18 and 30 years and had Dutch as their first language. All participants did not have not have any literacy difficulties such as dyslexia. Their education level had to be College A-level, Graduate, Undergraduate or Postgraduate to participate in the tests. To make sure that none of the participants were familiar with the NSR and its rules they were also asked if they had stayed in one of the areas of the NSR for over six months. All participants were recruited through an anonymous link due to the current situation of online lessons and working at home.

3.3 Procedure pre-test

The pre-test items were presented so that the participants had to choose between the two options, even if the differences were quite minimal. The test was made and distributed with the program Qualtrics, an online survey platform which can be accessed via laptop/PC or smartphone/tablet. The items were presented one at the time and once an answer was filled in, they could not go back to previous items. This ensured that they filled the pre-test in as intuitively as possible.

The task started with the stimulus pairs and filler items that were presented to the participants in a randomised other. After completing this first part, they had to fill out the LexTALE task and finally the proficiency questions and general ones. For the LexTALE task, the participants had to choose between the answers *'yes'* or *'no*' to decide of the word presented was a word or non-word. These were not presented at random and they could not go back to previous answers. There was no randomisation here since it was easier to compare their answers to the score sheet from LexTALE.

3.3.1 Data analysis pre-test

The test was designed to choose between two options and the following classification was made:

Pronominal subject	0
Lexical subject	1

The pre-test was unbiased when the average was $M = 0.5$ or a number close to this with no significant difference. The results were analysed with a t-test. To achieve this average of $M = 0.50$ some items of the pre-test were disregarded. These items were then deleted after the analysis of the test. This created an unbiased test as result of the pre-test. It is important that the actual test only contained items that overall have no bias towards one of the

conditions. The items that are deleted from the analysis in the pre-test, are not taken into consideration with the analysis of the actual test. All the data is analysed in SPSS (IBM Corp., 2017).

3.4 Procedure actual test

The procedure remained the same as with the pre-test. To see how it worked, see section 3.3.

3.4.1 Data Analysis actual test

The classification that was set up for the pre-test will be used here too. It is repeated below:

Pronominal subject	0
Lexical subject	1

The participants showed a sensitivity toward the TS-constraint of the NSR when the mean is higher than $M = 0.5$ and showed a significant effect ($p < 0.05$). When there is a significant effect, this meant that the participants did not choose at chance.

4. Results

The results of the pre-test and test can be found in Table 2.

Table 2: *Means and Standard Deviations.*

	N	*M*	*SD*
Test 1: Pre-test	20	.45	.21
Test 2: Test	30	.55	.19

Test 1: Pre-test Type of Subject condition. The pre-test was designed to create an unbiased test. All items that contained lexical subjects were awarded a score of 1 and the items that contained pronominal subjects were awarded a score of 0. Initially 24 items were analysed in

A one-sample t-test showed an initial bias towards the pronominal subjects (M = .40, SD = .19) for the pre-test. The average of each sentence was calculated and the sentences with an average below M = .15 were disregarded. The sentences 14, 17 and 24 were disregarded with the second analysis.

After another one-sample *t*-test was performed, without the three sentences with a low average, the result was an unbiased test which showed no significant effect (p = .30). The results in were M = .45 and SD = 0.21. All participants scored well on the LexTALE task and their results could be taken into account for analysis. They did not have a score of 40% or lower.

Test 2: Test Type of Subject condition. For the test a total of 21 items were analysed. The items that were disregarded in the pre-test were not analysed, even though they were still part of the test. Like the pre-test, the test items with a lexical subject were awarded a score of 1 and the items with a pronominal subject were awarded a score of 0.

A one-sample *t*-test showed that the mean was slightly above 0.5 (M = .55) and did not differ significantly from 0.5 (p = .16). The results showed a slim bias towards the lexical subjects. All participants scored well (a score higher than 40%) on the LexTALE task and their results could be taken into account for analysis. Figure 1 shows both results.

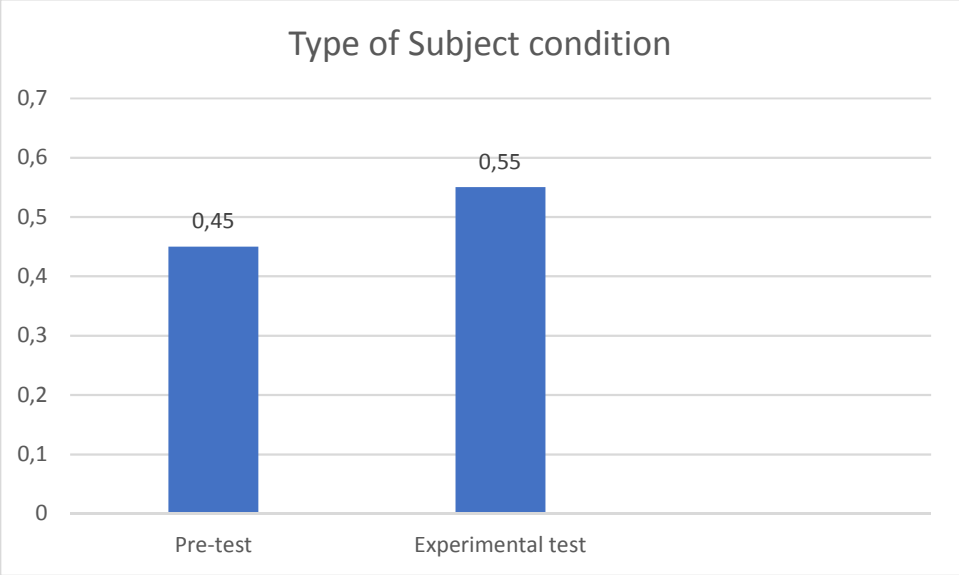


Figure 1*: Means of both pre-test and test.*

5. Discussion

This research is designed to see if advanced Dutch speakers of English show a sensitivity toward the Type of Subject constraint of the NSR when the test items only contained irregular plural test items. This study has examined whether there was an effect for Dutch advanced speakers of English if the test-items only contained irregular plurals. Two tests are conducted: a pre-test without the -s on the verbs and a test with the -s on the verbs.

The pre-test resulted in an average of $M = 0.45$ and the actual test had an average of $M = 0.55$ and had no significant effect of $p < 0.5$. The Dutch participants show a slight sensitivity towards the TS-constraint of the NSR without ever having had any input of this kind. The result of $M = 0.55$ is a trend in the right direction because it shows that the participants slightly favour the direction of the TS-constraint, since this was awarded a score of 1 in the analysis. The results do show a trend in the right direction for potential future research.

The results show that it is heading in the right direction, but high requirements were set at the beginning of the research as to when a result is meaningful. The pre-test should not differ significantly from $M = 0.50$ and the actual test had to according to the hypothesis. In the pre-test, the participants showed a slight preference towards the pronominal subjects ($M = 0.45$) and in the actual test a slight preference for the lexical subjects ($M = 0.55$). Considering the purpose of this experiment, it can also be argued that participants showed chance behaviour. If this result is compared to the result of previous research by Wilms (2019) it becomes clearer. For only the irregular subject in her test, she conducted the statistics afterwards to see if the effect remained significant. She found an average of $M = 0.62$ and this significantly differed from $p = 0.5$. An average that differed significantly from $p = 0.5$ was set at the beginning of the current experiment and unfortunately was not met.

I propose two possible points of improvement for this study. Firstly, it would have been better if the pre-test scored more closely to an average of $M = 0.50$. A score of $M = 0.49$ would have been better or preferably a perfect $M = 0.50$. The result of the pre-test already made it more difficult for the actual test to end up with a significant result. One could now also argue that the participants show chance behaviour. If the pre-test would score better, this discussion would be out of the equation. On the other hand, it still shows a step in the right direction. The participants did show a slight preference towards lexical subjects in the actual test, which is better than if it resulted in an average of $M = 0.46$ for example. There could possibly be an even better result if some improvements are made in the future.

Secondly, the search for participants. Since we were living in a situation where everyone had to stay at home as much as they could, it was more difficult to find participants and to check if they met the requirement of education and age. Both tests were distributed online and made it difficult to communicate with participants and monitor them. In an ideal situation, participants were recruited on campus where they could be closely monitored for the requirements and could communicate with the researcher if problems had occurred.

Then a similar problem to Freriksen (2019) occurred during this study as well. Some participants provided feedback that the test contained mistakes even though the instructions mentioned that sentences could be judged as ungrammatical. It was not possible to communicate with the participants that some sentences could be ungrammatical, but had to be filled in. The results of this study also contained a lot of responses with a progress of 22% or lower. From feedback received by some participants that belonged in the group of this low progress it became clear that they did not finish the test because they did not meet the requirement of age or education level. A requirement for education level was set to make sure that all the participants had the same knowledge about language and proficiency. This means that the requirements did work and only participants that fitted this description participated.

Another point of feedback that was gained from the participants was the length of the test. The addition of the 63 LexTALE items did not help for this. After finishing the TS-items and filler items of the test the participants received a notification that they finished that part of the test. They did not expect to be presented with another 63 items that were followed by questions. The participants received a notification after finishing the test and filler items that they had to fill in a few other questions. They probably did not expect to be that many questions. This part of the test had to introduced more clearly to the participants.

This experiment shows a trend in the right direction with participants choosing in the direction of the TS-constraint. One could argue that this result, in combination with the results from the study by Freriksen (2019), is possible evidence that Dutch speakers show a sensitivity towards the TS-constraint of the NSR. More research is needed to have a stronger argumentation behind this conclusion, but both results show that the participants tend to show a preference for the lexical plural subject instead of the pronominal subjects even if the preference is slim in the current research. This also means that the experiments provide evidence in favour of innate knowledge too. The participants did not have any knowledge about the NSR and its constraints before the experiment and yet choose the options with the TS-constraint in it. This knowledge about the NSR is then part of innate knowledge since the participants are native speakers of Dutch and the language does not have a linguistic phenomenon comparable to it.

6. Conclusion

This study focussed on the Type of Subject (TS) constraint from the Northern Subject Rule (NSR). The NSR is a grammatical feature where the verb can be marked with an -s in third person plural context. The Type of Subject constraint entails that the verb can be marked with an -s when the subject is lexical and plural. The TS-constraint is present throughout the entire NSR-dialect whereas the Subject Adjacency (SA) constraint is only present at the core area of the dialect.

This study concentrated on the TS-effect of the NSR and the question if Dutch speakers show a sensitivity towards it. The study hoped to contribute to the debate around the Poverty of the Stimulus (POS) argument. The NSR was used with advanced Dutch speakers of English like earlier research by Freriksen (2019). She tested participants with both constraints of the NSR. Her results were that the participants showed a sensitivity toward the TS-constraint, but not toward the SA-constraint. This study is an extension of her study and decided to test only the TS-constraint and use irregular plurals only. This led to the questions: how do native Dutch speakers rank sentences either adhering to or violation the TS-constraint of the NSR using only irregular plurals, while having had no input of this kind?

Firstly, a pre-test was executed to establish an unbiased test. The test had to be unbiased. In that case, the results of the actual test could actually show a bias towards one of the conditions. If the pre-test was not performed, it could have been the case there already was an initial bias in the items. The pre-test resulted in an almost unbiased test after three sentences were deleted. These sentences had an average of $M = .15$ or lower. The pre-test leaned slightly towards the pronominal subject items in the test. Afterwards the test could be performed. This resulted in a slim preference towards the TS-constraint with an average of $M = .55$ with a significant effect of $p < 0.5$.

The conclusion of this thesis is that advanced Dutch speakers of English show no sensitivity towards the TS-constraint which was the case with earlier research by Wilms (2019) and Freriksen (2019). Their results showed strong bias toward the TS-constraint that is not present in the current research. The results of the current study show that there is a trend in the right direction but no effect in the statistics. The participants show a slight favour in the direction of the TS-condition since these items were awarded a score of 1 in the analysis. The argument of innate knowledge seems to be applicable to the Dutch participants, but the argument in this case does not stand that strong since the participants do not lean heavily towards the TS-constraint. Their preference is only slightly present and could even be due to chance. More research is still needed to stand a stronger ground in the debate.

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ENGELSE TAAL EN CULTUUR

Teacher who will receive this document: Dr. Olaf Koeneman and Prof. dr. Ans van Kemenade
Title of document: The Northern Subject Rule: *Studying the Type of Subject effect in Native Dutch speakers.*
Name of course: BA Werkstuk Engelse Taalkunde
Date of submission: 3 July 2020

The work submitted here is the sole responsibility of the undersigned, who has neither committed plagiarism nor colluded in its production.

Signed

Name of student: Naomi van Ditshuizen

Student number: 1009827

Appendix A

Pre-test Type of Subject condition – test -s

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 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 Dutch;
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.

Thank you for your valuable contribution to the research!

Contact:
n.vanditshuizen@student.ru.nl

Section 2: Explanation pre-test

In the following section, you will be presented with pairs of 2 sentences. These two sentences are preceded by some context sentences. Please choose the sentence that you think sounds best. Note that the differences between the two sentences may be minimal: it can be that both sentences sound weird, or that both sound okay. In every case you must nevertheless choose one option. Please provide your answers intuitively.

Section 3: Pre -test TS plus 20 more PL-F items

3.1 Type of Subject items

PL-IG-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.

PL-CS-2:
Evi and Noah seem to be having a great time. The weather outside is cold and it rains terribly, but…
- Evi and Noah love running around.
- They love running around.

PL-IG-3:
These bacteria easily cause an epidemic. Many people are already struck.
- The bacteria spread rapidly.
- They spread rapidly.

PL-CS-4:
Joe and Penny plant trees every 15 years. They grow taller every year and the forest looks beautiful now.
- Joe and Penny visit the forest regularly.
- They visit the forest regularly.

PL-CS-5:
Look at Max and Sophie! The produce from that stall must be a success.
- Max and Sophie like fresh vegetables from the farm.
- They like fresh vegetables from the farm.

PL-G-6:
The needy in this town rarely come here. The shopping centre is always empty.
- The rich prefer busier places.
- They prefer busier places.

PL-IG-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.

PL-CS-8:
Jack and Danielle always seem in a hurry. Their jobs are very demanding and require a good schedule between work and private life.
- Jack and Danielle work around the clock.
- They work around the clock.

PL-IG-9:
My grandchildren make my feel young again. Not everyone is as lucky as I am.
- My grandchildren visit every Sunday.
- They visit every Sunday.

PL-G-10:
The poor are going through a tough time. The taxes rise every year, and…
- the poor need to work very hard.
- they need to work very hard.

PL-IG-11:
The women are shopping for their new seasonal clothes. The weather has suddenly changed, so…
- the women need new shoes.
- they need new shoes.

PL-G-12:
The educated normally have strict schedules. Yesterday was a long day of classes and studying, so…
- the educated stop early today.
- they stop early today.

PL-CS-13:
Eric and Jim don't like to be home alone. Many say it's dangerous in this area of town, and…
- Eric and Jim want to feel safe.
- they want to feel safe.

PL-IG-14:
The deer in this zoo are very scary. It's almost feeding time, and…
- the deer grunt terribly loudly.
- they grunt terribly loudly.

PL-IG-15:
The spokeswomen say times need to change soon. It's about time.
- The spokeswomen speak the truth, I hope.
- They speak the truth, I hope.

PL-G-16:
The rich are very important to our organisation. One mistake can ultimately change their perspective of the organisation.
- The rich have to be tread carefully.
- They have to be tread carefully.

PL-CS-17:
Dennis and Amy look very hungry. It's been a long day of hard work on the farm, so….
- Dennis and Amy crave a good meal.
- They crave a good meal.

PL-CS-18:
John and Mary take over this park during summer. The weather prospects say that it will a warm summer, so…
- John and Mary claim the spots in the shade.
- they claim the spots in the shade.

PL-IG-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.

PL-CS-20:
Freddy and Martin both needed a lot of care. The hospital was a regular visit for their parents due to accidents that happened once, but…
- Freddy and Martin look after themselves now.
- they look after themselves now.

PL-G-21:
The sick are a vulnerable part of our society. Especially during pandemics politicians do whatever it takes to keep them safe.
- The sick feel grateful for this.
- They feel grateful for this.

PL-G-22:
The elderly like to host game nights among friends. During these nights the table is usually set with wine and snacks.
- The elderly organise these nights once a month.
- They organise these nights once a month.

PL-G-23
The vulnerable represent the largest group of charities. Every year multiple fundraisers are hosted with the hope to collect money.
- The sick hope that these funds help find a cure.
- They hope that these funds help find a cure.

PL-G-24:
The neglected do not like to show their lives to others. As a result of previous opinions by others about their lifestyles …
- the neglected feel ashamed by this.
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Susie tried a pair of sandals. She'd rather have slippers, so she asked the shopkeeper to…
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- Mary hates to get them dirty.
- Mary hated to get them dirty.

PL-F-60:
My favourite thing to eat is pasta. Bolognese is a go-to recipe.
- I always cook this for my family
- I cook this for my family always.

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

Section 4: 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".

If you are sure that the word exists, even though you don't know its exact meaning, you may still respond "yes". But if you are not sure if it is an existing word, you should respond "no".

We use British English rather than American English spelling. For example: "realise" instead of "realize"; "colour" instead of "color", and so on. Please don't let this confuse you. This experiment is not about detecting such subtle spelling differences anyway.

If everything is clear, you can click next and start the trials.

Table 6[3]
LexTALE items and three included dummies presented in the questionnaire.

Dummy 1: platery	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: interface	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
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[3] All LexTALE items were presented separately and the participants were unable to revisit earlier responses. For the sake of space, the items are here represented in a table instead.

11: unkempt	27: rebondicate	43: proom	59: listless
12: breeding	28: ingenious	44: turmoil	60: wroughtly
13: festivity	29: bewitch	45: carbohydrate	

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

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 and 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: End

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

- Northern England (Cheshire, Cumbria, Country 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

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

For questions and/or comments about this survey, please contact us at n.vanditshuizen@student.ru.nl

Appendix B

Test Type of Subject Condition – test items

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 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 Dutch;
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.

Thank you for your valuable contribution to our research!

Kind regards,

The research team

Section 2: Explanation pre-test

In the following section, you will be presented with pairs of 2 sentences. These two sentences are preceded by some context sentences. Please choose the sentence that you think sounds best. Note that the differences between the two sentences may be minimal: it can be that both sentences sound weird, or that both sound okay. In every case you must nevertheless choose one option. Please provide your answers intuitively.

Section 3: Pre -test TS plus 20 more filler items

3.1 Type of Subject items

T-IP-1:

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

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

T-CS-2:
Evi and Noah seem to be having a great time. The weather outside is cold and it rains terribly, but…
- Evi and Noah loves running around.
- They loves running around.

T-IG-3:
These bacteria easily cause an epidemic. Many people are already struck.
- The bacteria spreads rapidly.
- They spreads rapidly.

T-CS-4:
Joe and Penny plant trees every 15 years. They grow taller every year and the forest looks beautiful now.
- Joe and Penny visits the forest regularly.
- They visits the forest regularly.

T-CS-5:
Look at Max and Sophie! The produce from that stall must be a success.
- Max and Sophie likes fresh vegetables from the farm.
- They likes fresh vegetables from the farm.

T-G-6:
The needy in this town rarely come here. The shopping centre is always empty.
- The needy prefers busier places.
- They prefers busier places.

T-IG-7:
The mice linger at night. It's too dangerous during the day.
- The mice waits until the cat sleeps.
- They waits until the cat sleeps.

T-CS-8:
Jack and Danielle always seem in a hurry. Their jobs are very demanding and require a good schedule between work and private life.
- Jack and Danielle works around the clock.
- They works around the clock.

T-IG-9:
My grandchildren make my feel young again. Not everyone is as lucky as I am.
- My grandchildren visits every Sunday.
- They visits every Sunday.

T-G-10:
The poor are going through a tough time. The taxes rise every year, and…
- the poor needs to work very hard.
- they needs to work very hard.

T-IG-11:
The women are shopping for their new seasonal clothes. The weather has suddenly changed, so…
- the women needs new shoes.
- they needs new shoes.

T-G-12:
The educated normally have strict schedules. Yesterday was a long day of classes and studying, so…
- the educated stops early today.
- they stops early today.

T-CS-13:
Eric and Jim don't like to be home alone. Many say it's dangerous in this area of town, and…
- Eric and Jim wants to feel safe.
- they wants to feel safe.

T-IG-14:
The deer in this zoo are very scary. It's almost feeding time, and…
- the deer grunts terribly loudly.
- they grunts terribly loudly.

T-IG-15:
The spokeswomen say times need to change soon. It's about time.
- The spokeswomen speaks the truth, I hope.
- They speaks the truth, I hope.

T-G-16:
The rich are very important to our organisation. One mistake can ultimately change their perspective on the organisation.
- The rich needs to tread carefully.
- They needs to tread carefully.

T-CS-17:
Dennis and Amy look very hungry. It's been a long day of hard work on the farm, so….
- Dennis and Amy craves a good meal.
- They craves a good meal.

T-CS-18:
John and Mary take over this park during summer. The weather prospects say that it will a warm summer, so…
- John and Mary claims the spots in the shade.
- they claims the spots in the shade.

T-IG-19:
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.

T-CS-20:
Freddy and Martin both needed a lot of care. The hospital was a regular visit for their parents due to accidents that happened once a month, but…
- Freddy and Martin looks after themselves now.
- they looks after themselves now.

T-G-21:
The sick are a vulnerable part of our society. Especially during pandemics politicians do whatever it takes to keep them safe.
- The sick feels grateful for this.
- They feels grateful for this.

T-G-22:
The elderly like to host game nights among friends. During these nights the table is set with wine and snacks..
- The elderly organises these nights once a month.
- They organises these nights once a month.

T-G-23
The sick represent the largest group of charities. Every year multiple fundraisers are hosted with the hope to collect money..
- The sick hopes that these funds help find a cure.
- They hopes that these funds help find a cure.

T-G-24:
The neglected do not like to show their lives to others. As a result of previous opinions by others about their lifestyles …
- the neglected feels ashamed by this.
- they feels ashamed by this.

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- Other:

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What is your age in years?

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

Section 7: End

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

- Northern England (Cheshire, Cumbria, Country 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

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