

# Investigating the Bottleneck Hypothesis in Second Language Acquisition

*The acquisition of narrow syntax and functional morphology among Norwegian L2 learners of English*

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## **Foreword**

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## 1 Introduction

In this thesis, I test the Bottleneck Hypothesis (Slabakova 2008, 2013, 2016). The Bottleneck Hypothesis (BH) accounts for what is easy and what is hard to acquire in a second language (L2). The BH claims that functional morphology is the difficult part of second language acquisition, and that narrow syntax, for instance, is easier to acquire. More specifically, the BH argues that when English is acquired as L2, the two morphological constructions *subject verb agreement* and *past tense -ed* are more difficult to acquire than narrow syntax.

L2 acquisition is a widely debated linguistic field. Several theories have been developed to understand the cognitive processes of people acquiring an L2. While people in general acquire their native language (L1) more or less perfectly, most people do not reach the same level of proficiency in their L2 (White 2003; Slabakova 2008). Gass (2013:46) emphasizes that the study of L2 addresses three main areas: how learners can create a new language system with limited exposure to the target language, what we actually learn from the L2, and what we do not learn, see section 2.1 for further discussion on L2 acquisition. The BH is a hypothesis aimed to investigate what the difficult parts of L2 acquisition is; thus, to investigate which cognitive processes are more difficult in L2 acquisition.

The BH has not been solely tested by several others as it is a relatively new hypothesis. In fact, Jensen (2016) is the first work that is designed to specifically test the BH. Therefore, Jensen (2016) is a central model in the current thesis. In addition, a study by Slabakova and Gajdos (2008) is addressed as their study supports the BH. Both studies conclude that functional morphology is the difficult part of L2 acquisition. These are further discussed in section 2.2.1. In chapter 6 I discuss how the results of these studies are both similar and different to the results in the current study. As the following chapters demonstrate, the current thesis does not solely support the claims of the BH. Transfer from the L1 and interpretability are then discussed as possible reasons for the difference in the results.

It is interesting to test the BH because not many have done it before, as mentioned above. It is important to do thorough research on the different existing hypotheses within the field of L2 acquisition. By doing so, one can find evidence for or against the hypotheses in order to learn how the brain works when it comes to L2 acquisition. In addition, it is

interesting to know what is difficult in L2 acquisition regarding the L2 classroom when L2 is being taught in school. The main focus in the current thesis is the former notion, namely to study the cognitive process during L2 acquisition. The second notion is discussed in section 6.2, as the BH makes some claims about teaching an L2.

In the current thesis, I test Norwegian L1 speakers acquiring English as L2 by carrying out an acceptability judgement task (AJT). The participants judge several sentences on a Likert scale from 1 to 4 based on whether they think the sentences are acceptable or unacceptable. The sentences test the constructions exemplified below. Every test sentence appear with a grammatical and an ungrammatical version during the test. Section 4.4 addresses the main experiment and the sentences in more detail. The constructions being tested in the current thesis are the two morphological conditions suggested by the BH; subject verb agreement and past tense, and two conditions within narrow syntax; verb movement across an adverb in subject-initial clauses and verb movement across the subject in non-subject initial clauses, see (1) to (4). The constructions are further discussed in section 2.3. The AJT is carried out on fifteen Norwegian 4<sup>th</sup> graders and fifteen Norwegian 8<sup>th</sup> graders, whom are all acquiring English as their L2. The participants are further discussed in section 4.2.

(1) *3<sup>rd</sup> person singular subject*

The teacher talks about mathematics and numbers.

\*The teacher talk about mathematics and numbers.

(2) *Past tense*

The baker baked a cake two hours ago.

\*The baker bake a cake two hours ago.

(3) *Non-subject initial clauses, verb movement*

Last night the girl opened a present from her dad.

\* Last night opened the girl a present from her dad.

(4) *Subject-initial clauses, verb movement*

The girl always played soccer with her brother.

\* The girl played always soccer with her brother.

Like Slabakova and Gajdos (2008) and Jensen (2016), the current study found that functional morphology, represented by subject verb agreement, appeared to be difficult to acquire, and more difficult than narrow syntax. By looking at the results from the morphological constructions and both syntactic constructions together it seemed that the morphological constructions were the most difficult to acquire. However, by a closer investigation of the results, it seemed to be differences between the conditions concerning both the morphological and syntactic constructions. One of the morphological constructions was considerably more difficult than the other. Likewise, concerning the syntactic conditions, one of the two constructions was considerably more difficult than the other. The results indicate that for Norwegian L1 speakers acquiring English as L2, past tense -ed is easier to acquire than subject verb agreement, and verb movement across the subject in non-subject initial clauses is easier than verb movement across an adverb in subject initial clauses; see section 2.3.3 for further explanation on verb movement. Furthermore, the results indicate that past tense is easier than verb movement across an adverb in subject-initial clauses.

Due to the theory of transfer from L1, the Full Transfer / Full Access hypothesis (Schwartz and Sprouse 1994, 1996) (see section 2.1.1), and interpretability vs. uninterpretability (see section 2.1.2), the current study argues that there might be several reasons and influences that lead to the past tense -ed being easier than one of the syntactic conditions. The current thesis does, to some degree, lend some support to the BH as it does argue that functional morphology, represented by subject verb agreement, is more difficult to acquire than verb movement. Nevertheless, the current thesis also argues that past tense is not particularly difficult to acquire, and even easier to acquire than verb movement in subject-initial clauses where the verb moves across an adverb. Therefore, I pose that the BH may need some more research and refining in order to improve the preciseness on what is easy and what is hard to acquire in L2 acquisition.

## **2 Theoretical background**

In the following sections, the theoretical background for the current study is presented. First, I address the field of second language acquisition (SLA) and discuss some general concepts within SLA with respect to the generative approach. In section 2.2 I discuss the Bottleneck Hypothesis (BH) including some previous research on the hypothesis. In section

2.3 I discuss the different constructions that is tested in this study, both the English and the Norwegian versions.

## 2.1 Second language acquisition

Most people acquire their L1 more or less perfectly, independent of intelligence (White 2003:3). At the same time, most people do not acquire the same level of proficiency in their L2 (Slabakova 2008:1). Failure in the acquisition of some aspects of the L2 is common, and L2 learners typically fail to sound like native speakers of the target language (Slabakova 2008:1).

Gass (2013:46) provides an overview of what we actually study when studying L2 acquisition. She addresses three main areas that SLA studies study: how learners can create a new language system with only limited exposure to the target language, what we actually learn from the L2, and what we do not learn. Gass (2013) further argues that SLA studies focus on studying the reasons why most L2 learners never reach a native-like proficiency in their L2, but also the study of how some learners do reach a native-like proficiency in a second language. The study of SLA is a part of the linguistic study that aims to study the nature of the cognitive processes in the human mind (Gass 2013:48). Slabakova (2016) likewise argues that the study of SLA is about the processes in the human brain concerning the language architecture and how this is put together when a second language is being acquired.

Gass (2013) considers all languages acquired after the L1 to be *second languages*. Rothman, Amaro and de Bot (2013) argue that languages acquired *after* the L1 must be separated as their initial stages ( $S_0$ ) differ. They argue that the *second* acquired language must be referred to as L2, the *third* acquired language as L3 and so on. Hereafter, I use the term *second language* to refer to the actual *second* language the learner is exposed to.

The BH is a hypothesis within generative linguistics. Chomsky's (1995:167) minimalist program for linguistic theory assumes that language is a part of the natural world and that the human brain contains a language faculty that processes the usage and understanding of language. Every language has its grammar, which means that every

language has a theory for how the current language works. “The theory of languages and the expressions they generate is Universal Grammar (UG); UG is a theory of the initial state  $S_0$  of the relevant component of the language faculty” (Chomsky 1995:167). White (2003:58) argues that the term *initial state* “... is variously used to mean the kind of unconscious linguistic knowledge that the L2 learner starts out with in advance of the L2 input and/or to refer to characteristics of the earliest grammar”. In other words, the unconscious linguistic knowledge the learners have about their L1. In this thesis, I use White’s (2003:58) definition when referring to  $S_0$ . She follows Chomsky’s view concerning a language’s grammar being an unconscious linguistic system in the brain and that “... native-speaker grammars are constrained by built-in universal linguistic principles, known as Universal Grammar (UG)” (White 2003:1).

White (2003:1) refers to the term *interlanguage grammars* as all non-native grammars, or learner grammars. In other words, if the grammar is a learner grammar, it is an interlanguage grammar. This is how I too refer to interlanguages throughout this thesis.

Regarding first language (L1) acquisition, UG works as a genetic blueprint that determines what a grammar can be like (White 2003:2). In this thesis, like White (2003), Slabakova (2016) and Chomsky (1995), amongst others, I presuppose that L1 acquisition is driven by UG. Slabakova (2008, 2013, 2016) argues that language acquisition is comprehended by UG, and that the systems of the L1 and the L2 have representational similarities. A more detailed discussion on UG and the BH is accounted for in section 2.2.

### **2.1.1 Transfer from L1**

Foley and Flynn (2013:98) point out that there are two important terms regarding how the L1 influences the acquisition of an L2; *transfer* and *interference*. Transfer is what happens when conditions from the L1 lead to correct use of the construction in the L2. Interference is thus what happens when conditions from the L1 lead to incorrect use in the L2.

Lado (1957) presents the *Contrastive Analysis*. This approach argues that learning a second language is learning the similarities and differences between L1 and L2. Further, the Contrastive Analysis hypothesis argues that similarities between L1 and L2 makes the

acquisition of L2 easier, and likewise that differences between L1 and L2 makes the acquisition of L2 harder. This approach, among others, leads to further analysis of the mistakes made by L2 learners (Foley and Flynn 2013:99). Several theories on transfer have been developed in the recent years. In the following paragraph, I present the *Full Transfer / Full Access Hypothesis*.

The Full Transfer / Full Access hypothesis (FT/FA) is proposed by Schwartz and Sprouse (1994, 1996). The main idea in the FT/FA hypothesis is that the grammar of the L1 is fully accessible as the  $S_0$  for the L2 in development. They further argue that when the conditions in the L1 grammar do not yield to the L2 grammar, UG is accessible to the learner. Thus, the conditions that need to be restructured in order to yield to the L2 grammar may be restructured through UG.

### 2.1.2 Interpretable vs. uninterpretable features

Slabakova (2013:8) provides an example in order to demonstrate how interpretable and uninterpretable features pose different issues in L2 acquisition. Example (5) is taken from Slabakova (2013:8) and shows examples of interpretable and uninterpretable features.

(5) He often take-s the bus.



*Agree*

[3rd person, singular subject]

[Tense: present]

[Aspect: habitual]

Overt Subject obligatory

Nominative Subject

Verb stays in Verbal Phrase

In this paragraph, the interpretable and uninterpretable features in (5) from Slabakova (2013:8) are addressed. Interpretable features contribute to the interpretation of the sentences;

hence interpretable features cannot be eliminated from a sentence without changing the semantic meaning of the sentences. Uninterpretable features, on the other hand, do not contribute to the semantic meaning and are possible to eliminate as they do not provide a change in the interpretation of the sentence; they rather provide purely grammatical meaning. As she points out, sentence (5) has many features present. The interpretable features, the features that contribute to the semantic meaning in the sentence, are [masculine], [3<sup>rd</sup> person], and [singular]. The verb is marked with the exponent -s that expresses the feature which both ensure that the verb agrees with the subject and indicates that the sentence is in present tense. Thus, in (5), the -s indicates both an interpretable and uninterpretable feature. It indicates tense, which is an interpretable feature while also indicating agreement, which is an uninterpretable feature. Thus, the interpretable features are the ones that contribute to the meaning in the sentence, the features that change the information conveyed in the sentence if changed or removed. The uninterpretable features, on the other hand, do not necessarily change the information conveyed in the sentence, however, they do indicate whether the sentence is grammatical or ungrammatical.

The interpretable and uninterpretable features vary from language to language, and because of the variation, "... this attribution is predicted to pose problems for L2 learners" (Slabakova 2013:8). In the current study, based on the BH's predictions, tense and agreement is tested as they are predicted to be the most difficult features (see sections 2.2 and 2.3). Concerning the English language, these two differ with respect to interpretability. Tense is an interpretable feature, as addressed in the paragraph above, while agreement is an uninterpretable feature. The past tense marker -ed is thus necessary in order to maintain the meaning in a sentence. The agreement -s does not change the meaning in a sentence. If the -s is left out of a 3<sup>rd</sup> person singular sentence, it only makes the sentence ungrammatical.

## **2.2 The Bottleneck Hypothesis**

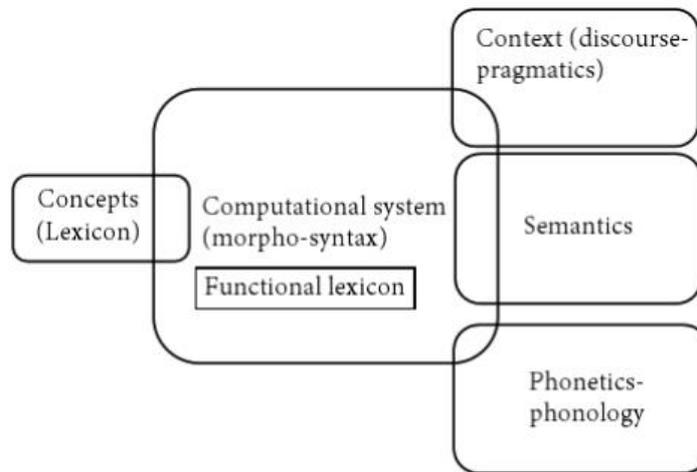
The Bottleneck Hypothesis (BH) is proposed by Slabakova (2008; 2013; 2016). The BH is a hypothesis within the field of second language acquisition concerning what is easy and what is hard to acquire in a second language. The BH addresses the L2 acquisition taking place significantly later than the acquisition of L1. Slabakova (2008; 2013; 2016) argues that

functional morphology is the bottleneck of L2 acquisition. More specifically, she argues that the functional morphemes subject-verb agreement *-s* and past tense *-ed* pose the most problems; hence they are the bottleneck of SLA.

Generative linguistics is a central part of the model. The BH builds on the assumption that language acquisition is comprehended by UG and that there are representational similarities between the systems of L1 and L2 (Slabakova 2016:390). As a second language learner, one has already acquired an L1. This means that the Language Acquisition Device (LAD) is already matured and engaged in the sense that the learner already has developed a set of grammatical meanings and lexical-semantic concepts (Slabakova 2016:390). Chomsky (1986:3) explains LAD as "... an innate component of the human mind that yields a particular language through interaction with presented experience, a device that converts experience into a system of knowledge attained: knowledge of one or another language". Chomsky (1986:146) further argues that LAD is associated with being a finite set of switches, with a finite number of positions. These switches constrain the possible form of a grammar. Exposure from the target language sets the switches in the right positions. When the switches are set, the system is in function and the grammar is in place. Slabakova (2016:390) argues that learning a second language mainly is about learning new ways of expressing and comprehending the already existing concepts that are in UG. She argues that this essentially happens through comprehensible linguistic input and the LAD (Slabakova 2016:390). In other words, L2 acquisition is setting the parameters through LAD in order to switch the switches into the correct positions for the L2.

Slabakova's (2013:5) prediction that functional morphology is the bottleneck of L2 acquisition is based on comparisons of findings on the L2 acquisition of functional morphology, syntax, the syntax-semantics and syntax-discourse interfaces. She argues that in L2 acquisition functional morphemes and their features are more problematic than for instance syntax and semantics.

It is important to look at the architecture of the language faculty when attempting to understand how language acquisition works. Slabakova (2013:7) argues that the architecture of the language faculty directly bears on what must be learned and what comes for free in L2 acquisition. She provides a widely accepted model of grammar by Reinhart (2006) in order to explain how one can recognize what comes for free and what has to be learned. This is illustrated in Figure 1.



*Figure 1. Modular design of the language faculty (Slabakova 2013:7).*

In this paragraph Figure 1 is reviewed according to Slabakova (2013:8; 2016). The computational system in the middle of the model represents a working space where lexical items from the language-specific lexicon develop to become meaningful sentences. In other words, it is in the computational system that Principles and language-specific parameters, the universal grammar, reside. From the computational system, complete syntactic objects are passed on to the systems for phonetics-phonology and semantics for linearization and pronunciation and interpretation, respectively. She points out interpretable and uninterpretable features as two relevant types of formal features to the grammar-meaning interface, see section 2.1.2 for a discussion on interpretability. Ultimately, the point is that "... grammatical operations that happens at the interfaces between linguistic modules are somehow harder to and more demanding" (Slabakova 2016:16). She further argues that this is because the operations have to take information from more than one module into account.

### **2.2.1 Previous research**

The following section presents two previous research that have been carried out testing whether functional morphology is the difficult part of L2 acquisition. The first presented study is carried out by Slabakova and Gajdos (2008) and the second presented study is carried out by Jensen (2016). Slabakova and Gajdos (2008) studied the difficulty of

acquiring functional morphology in L2 acquisition amongst English children learning German as their L2. Jensen (2016) tested the BH with Norwegian children learning English as their L2.

### **Slabakova and Gajdos 2008**

Slabakova and Gajdos (2008) tested the acquisition of functional morphology amongst English children acquiring German as their L2. They carried out an experimental study on US university students, testing how the students calculated the German copula verb *sein* (“be”) and its uninterpretable features of agreement (see Slabakova and Gajdos (2008) for further explanation on the grammatical features). The participants’ proficiency was measured according to the number of class hours of exposure to German instruction. Thus, they divided the participants into two groups; beginner and intermediate learners. The beginner learners had been exposed to German through approximately 40 class hours, while the intermediate learners had been exposed to German for approximately 140 class hours. In addition, they tested 18 native speakers of German from Düsseldorf as a test group. The test was a written test where the subject was missing. The participants had to choose from five options which subject they thought went with each variety of the *sein* verb.

They express the hypothesis and prediction as the following:

We hypothesized that the copula form *sind* would account for a larger proportion of the errors in acquisition. If L2 learners are guided by the same universal feature evaluation metric as German acquiring children are, then we expect English learners of German to demonstrate evidence of overusing *sind* in the process of learning the target agreement morphology, and hence, making more errors with it. (Slabakova and Gajdos 2008:39)

By analysing the data from the test, they found that compared to the beginners, the intermediate learners did not become particularly better with *sind* even though they had been exposed to German for a significantly longer time. By further analysis of the data they concluded that language-internal explanations really are the only credible explanations, such as combinatorial variability. They argue that there “...may be different sources for variable L2 morphosyntactic performance” (Slabakova and Gajdos 2008:42). Thus, this study

indicates that functional morphology is difficult to acquire.

## **Jensen 2016**

Jensen (2016) tested the BH in L2 acquisition of English by Norwegian L1 speakers. Her main research questions were:

RQ1: Is morphology more difficult than narrow syntax in L2 acquisition?

RQ2: Is morphology a more persistent problem than narrow syntax?

(Jensen 2016:5)

She tested subject-verb agreement, which represents functional morphology, and verb movement, which represents narrow syntax. Further, she tested different structures of subject-verb agreement and verb movement. She did this based on earlier research which has shown that sentence structure influences the difficulty of a construction. She found that "... the mean score for judgements of ungrammatical agreement is significantly higher than the mean score for judgements of ungrammatical verb movement. This means that there are significantly more incorrect judgements with agreement when the sentences are ungrammatical" (Jensen 2016:83). She also found that the mean scores for the grammatical sentences, both verb movement and agreement, were higher, and thus the participants made fewer mistakes when judging the grammatical sentences. This was the case in every proficiency group. They consequently made more errors with the ungrammatical sentences than with the grammatical. Therefore, the judgements of the ungrammatical sentences provide the best illustration of the participants' proficiency with each construction. The different types of sentences she tested are exemplified in (A) and (B).

### *(A) Subject-verb agreement*

- a. The girl drinks wine [3rd person sg, local agreement]
- b. The girls drink wine [3rd person pl, local agreement]
- c. The girl with the heavy books drinks coffee [3rd person sg, long-distance]
- d. The girls in the red car drink coffee [3rd person pl, long-distance]

### *(B) Verb movement*

- a. Yesterday the students drank wine [Lexical verbs]
  - b. Tomorrow the students will drink wine [Auxiliary verbs]
- (Jensen 2016:7)

Jensen (2016) used an acceptability judgement test to investigate the constructions above. In addition, she had the participants do a proficiency test and answer some questions about themselves and their languages to establish their proficiency level, and to establish their L1 and L2. She had a total of 60 participants with an age range from 11-12 and 15-18. Further, she divided the participants into four proficiency groups: low intermediate, intermediate, high intermediate and advanced speakers, where the participants' performance was considered both across and within each proficiency level.

The main findings in Jensen (2016) lend support the BH. Her findings suggest that subject-verb agreement is significantly more difficult than verb movement. She found the result both in the lower proficiency levels and at the more advanced levels. Jensen (2016:9) found that "... whereas performance in verb movement makes a developmental jump from the intermediate stage to the high intermediate stage, acquisition of subject-verb agreement seems to stagnate".

### **2.3 Constructions**

The purpose of the current thesis is to test functional morphology against narrow syntax, and further to test two functional morphemes and two types of syntactic construction against each other. Subject-verb agreement and past tense -ed is used to represent functional morphology, and verb movement in two types of declaratives sentences is used to represent narrow syntax; verb movement across an adverb subject-initial declarative clauses and verb movement across the subject in non-subject initial declarative clauses. As already mentioned, the BH claims that functional morphology is harder to acquire than narrow syntax.

### 2.3.1 Subject-verb agreement

In English, the verb can vary in form. Often, the form of the verb depends on the subject in the sentence. English has overt agreement morphology, which primarily means that the verb and the subject in a sentence must agree in person and number (Carter and McCarthy 2006:496). With two exceptions<sup>1</sup>, verbs agree with third person singular subjects in present tense sentences (Carter and McCarthy 2006). The agreement adds the suffix *-s* to the verb, see example (5). In order to check if a subject is third person singular, one can simply replace the subject with either *he*, *she* or *it*. If the replacement works without changing the meaning in the sentence the subject is third person singular (Dypedahl et. al. 2012), see example (6).

(5) The girl takes a nap every afternoon.

\* The girl take a nap every afternoon.

(6) The girl takes a nap every afternoon.

She takes a nap every afternoon.

In English, the verb appears in its uninflected form in present tense sentences whenever the subject is not third person singular (Carter and McCarthy 2006). This is exemplified in (7), where the suffix *-s* is marked in bold in the sentence with a third person singular subject.

(7) She	<b>drives</b>	a car.	[3 <sup>rd</sup> person singular]
I	drive	a car.	[1 <sup>st</sup> person singular]
You	drive	a car.	[2 <sup>nd</sup> personal singular]
They	drive	a car.	[3 <sup>rd</sup> person plural]

---

<sup>1</sup> The two exceptions that do not take the agreement *-s* are *be* and the modals: “(1) the verb *be* has three forms in the present tense – *am*, *are*, *is* - and two in the past tense – *was*, *were*; and (2) the modal auxiliaries have no *s*-form (*I must leave* – *he must leave*)” (Dypedahl et. al 2012:103).



### 2.3.2 Past tense *-ed*

In English, past tense is marked by adding the suffix *-ed* to regular verbs (Carter and McCarthy 2006). This is exemplified in (12) where sentence *a.* represents past tense while sentence *b.* represents present tense. Present tense verbs, as mentioned in chapter 2.3.1, appear in their uninflected form whenever the subject in the sentence is not third person singular. Thus, regarding the regular verbs, past tense is marked by simply adding the suffix *-ed* to the stem of the verb.

- (12) a. They walked home [past tense]  
b. They walk home [present tense]

Like English, Norwegian marks the past tense by adding a suffix to the regular verbs (Faarlund et. Al. 2006). In contrast, English adds the same suffix to all regular verbs while Norwegian operates with several versions of the past tense suffix. These are marked in bold in table 1.

Infinitive	Present tense	Past tense
kaste 'throw'	kaster 'throw'	kasta el. kastet 'threw'
lyse 'illuminate'	lyser 'illuminate'	lyste 'illuminated'
leve 'live'	lever 'live'	levde 'lived'
nå 'reach'	når 'reach'	nådde 'reached'

Table 1: the Norwegian past tens suffixes. (Norsksidene.no)

### 2.3.3 Verb movement

English is an SVO language. This means that the word order typology of English is Subject Verb Object (Börjars and Burridge 2010:9). In the current study, the sentences used



approximately 100 Norwegian school children aged 7 to 12 years old. Based on the data she collected, she found that the transfer of the V2 word order was evident, and that speakers of a V2 ruled language need to “unlearn” the V2 structure of the sentences in order to be able to acquire the proper SVO rule for sentence structure in English. She also found that different sentence types varied in the time the learners need to acquire the structure. Based on her data, she found that sentences with topicalized adverbials proved to be in place earlier, and that sentences with initial objects were in place later.

### **3 Research questions and predictions**

In the following chapter I describe the research questions, hypothesis and predictions for the current study. In sections 3.1, I describe the research questions that the current study is based on. In section 3.2, I describe the hypothesis and predictions which is based on the different theories presented above.

#### **3.1 Research questions**

In the current study two main research questions are addressed: RQ1 and RQ2.

RQ1: Is functional morphology more difficult to acquire than narrow syntax in L2 acquisition?

RQ2: Are the two morphological conditions equally difficult in L2 acquisition?

Research question 1 is raised to test the BH's prediction that functional morphology is more difficult to acquire than narrow syntax in L2 acquisition (see section 2.2). RQ1 is addressed by comparing the results from the acceptability judgement task from the participants in the two groups (see section 4.4). The comparison of the results indicates whether the participants perform better, worse or alike on the test sentences testing the different constructions within functional morphology and narrow syntax. Research question 2 is also raised to test the BH's prediction that functional morphology is more difficult. RQ2 is included because the two morphological constructions from the BH behave quite different, as do the syntactic constructions. Thus, RQ2 tests whether the two constructions are approximately equally difficult, as these are the two morphological conditions the BH originally focuses on as the most difficult part of L2 acquisition when English is L2.

### **3.2 Hypothesis and predictions**

With respect to the Bottleneck Hypothesis and the previous research referred to in section 2.2 and 2.2.1, the research hypothesis for the current thesis is that for Norwegian L1 speakers acquiring English as their L2, functional morphology is more difficult to acquire than narrow syntax; functional morphology being represented by the agreement -s and the past tense -ed, and narrow syntax being represented by verb movement in subject-initial clauses and non-subject initial clauses.

Prediction 1: Based on the BH, prediction 1 suggests that functional morphology is more difficult to acquire than narrow syntax.

Prediction 2: Based on the BH, the two morphological conditions should individually be more difficult to acquire than both syntactic conditions.

Both prediction 1 and prediction 2 are based on the BH. Prediction 1 is based on the main claim proposed by the BH, namely, that functional morphology is more difficult to acquire than narrow syntax. Prediction 2 is based on the main claim proposed by the BH as well. However, due to the different nature of the two morphological constructions, as discussed in sections 2.1.2 and 2.3, they may not be equally difficult to acquire. Nevertheless, according to the BH, both of the morphological constructions should be more difficult than both of the syntactic constructions. Thus, RQ2 addresses the differences in difficulty between both constructions within functional morphology and both constructions within narrow syntax.

## 4 Methodology

The methodology in the current thesis is inspired by Jensen (2016), who has recently carried out a similar experiment. The participants in the current study were exposed to a threefold test in order to gather data about their acquisition of the different constructions presented in section 2.3. Prior to the actual test a minor pilot study was carried out, which is discussed in section 4.1. The participants are discussed in section 4.2. The test also contained a proficiency test and a questionnaire regarding the participants' languages and age. These are discussed in section 4.3. The main experiment is an acceptability judgement task (AJT). The AJT is the part of the test that gathers the data about the participants' judgement of the different constructions, and is therefore the part of the test that gets the most attention in the following sections. The AJT is discussed in more detail in section 4.4.

The participants are in an early stage of their L2 acquisition, as they are quite young (see section 4.2). Thus, too much and too difficult test items could possibly overwhelm the participants and influence the results. If the participants do not judge the sentences, but rather just click through the test in order to finish, they could produce or cause faulty results and thus influence the conclusions of the experiment and must be avoided as far as possible. As I only had one school hour with each class, the test had to be possible to complete within the given time frame. Children do not have the same level of attention as adults, and this must be considered when working with young children. The length of the test is therefore critical in order to maintain the children's attention throughout the test. In the end, some of the children spent more time finishing the test than expected. Thus, a longer test could have resulted in some of the participants not being able to finish.

The test is an electronic test, carried out through the electronic web based survey program *Questback*. Questback provides complete anonymity for the participants, which means that the participants' identity is fully protected and the data is not traceable back to the individual participants. According to NSD - Norwegian Centre for Research Data (nsd.no), the recommended age of self-consent is 15 years old. In the current study, the participants are 4<sup>th</sup> graders and 8<sup>th</sup> graders, which means they are between 9 years old and 13 years old. Therefore, because the participants were all under the age of 15, they had to have their parents' approval in order to participate. Before the test was carried out the teachers in both classes informed the pupils about the test, and gave each one of them a copy of the

information letter and declaration of consent for their parents to sign (see appendix 5). These letters were brought back to the teachers prior to my visit.

#### **4.1 The pilot study**

Prior to the experiment, I carried out a minor pilot study. The participants in the pilot were my little sister, who is 10 years old, and three fellow students of mine, whom are all studying English at MA level courses at UiT The Arctic University of Norway. They all have Norwegian as L1 and English as L2. By carrying out the pilot study I mainly wanted to know three things, which are listed below.

1. Did the pilot participants find the test to be too easy or too difficult in any way?
2. Did the pilot participants understand how to participate in the test?
3. Did the pilot participants find any errors concerning either the layout, spelling mistakes, or the test sentences?

The age groups for the main experiment were mostly predetermined, thus researching suitable age groups was not the main focus of the pilot. Based on Jensen (2016) I presumed that the oldest group, the 8<sup>th</sup> graders, would have no problems with the design of the experiment and the attached proficiency test. However, I had my 10 year-old sister examine whether she found the design too difficult in order to make sure that the youngest group would be able to complete the test. After she completed the test, we discussed how she felt about the design, the length and the difficulty of the test. Her opinions were that the design was good, and she had no problems understanding what to do. Further, she found the test items quite difficult, however she felt confident that she had managed to correctly judge some of the sentences. She understood most the context of the sentences, which indicated that the words used were mostly suitable for the age group, with an exception of a few words. Furthermore, she was not able to distinguish all the sentence pairs (see section 4.4.1) and she thought there were some identical test items. Based on her feedback I concluded that children her age should be able to complete the test satisfyingly with respect to the current study.

After carrying out the pilot with the 10-year-old and the university students, I discussed the test with them. The feedback I got led to some minor changes in the test. Some of the changes that were made concerned the vocabulary. As an example, a few words were changed to even more frequent words. Some of the sentences in the proficiency test, as discussed in section 4.3, were changed in order to make the content more familiar to the participants. One larger change was made as well. The proficiency test contained some sentences with historical facts that are possibly unfamiliar to the participants because of their young age. In order to avoid confusion about the historical events, information about the events was added. The information was added in Norwegian, thus it should not compromise the judgement of the English test items. See section 4.3 for further discussion on this topic.

## 4.2 The participants

The participants in this study are 4<sup>th</sup> graders and 8<sup>th</sup> graders located in Tromsø in Northern Norway. 4<sup>th</sup> graders in Norwegian schools are 9 and 10 years old, and 8<sup>th</sup> graders are 12 and 13 years old. In Norwegian schools, English instructions start in the 1<sup>st</sup> grade. During the first four years in school the pupils attend 138 teaching hours in the English subject, in which the teaching hours are presented in 60-minute units (Udir.no<sup>3</sup>). After the four first years in school, there are several competence aims in the English subject curriculum. In the current curriculum, *Kunnskapsløftet LK06*, the aims for the written communication in the English subject curriculum are the following (Udir.no<sup>1</sup>):

The aims of the studies are to enable pupils to

- use simple reading and writing strategies
- understand the relation between English phonemes and letters and put sounds together to form words
- understand the meaning of words and expressions based on the context they are used in
- read, understand and write English words and expressions related to one's needs and feelings, daily life, leisure time and own interests
- understand the main content of simple texts about familiar topics

- write short texts that express opinions and interests, and that describe, narrate and enquire
- use some common short words and simple spelling and sentence patterns
- use digital tools to retrieve information and experiment in creating texts

The Norwegian English subject curriculum is designed to provide competence aims that should be reached after Year 2, Year 4, Year 7 and Year 10. Therefore, the 8<sup>th</sup> graders are here presented with the competence aims after Year 7 as this is more likely to be valid for them than the competence aims after Year 10. During Year 5 through 7 the pupils have attended 228 teaching hours in the English subject (Udir.no<sup>3</sup>). The competence aims regarding the written communication after Year 7 are the following (Udir.no<sup>2</sup>):

The aims of the studies are to enable pupils to

- use reading and writing strategies
- understand and use a vocabulary related to familiar topics
- understand the main content of texts one has chosen
- read and understand different types of texts of varying length from different sources
- take notes to create different types of texts
- write coherent texts that narrate, retell and describe experiences and express own opinions
- use basic patterns for orthography, word inflection, sentence and text construction to produce texts
- use digital tools and other aids to find relevant information and to create different types of texts

There are fifteen participating 4<sup>th</sup> graders and fifteen participating 8<sup>th</sup> graders in this study. Originally I hoped for 25 or more participants in each group. However, within the timeframe I had, only two teachers accepted the request of participation, and only fifteen pupils in each class agreed to participate.

The two age groups were chosen in order to capture the youngest learners at the very beginning of their L2 acquisition process, and the older ones after four more years of language learning. The reason why these age groups were chosen is that I wanted to be able to compare the results from the two groups' in order to examine whether the acquisition of the different constructions develops differently. By capturing the youngest learners, the 4<sup>th</sup> graders, at the very beginning of their L2 acquisition, I hoped to find that they performed approximately the same on the different constructions and that the older ones, the 8<sup>th</sup> graders, would show that the different constructions develop differently over time. The results are further discussed in chapter 5.

### **4.3 The proficiency test and questionnaire**

To establish the general level of proficiency in English among the participants and to see how their general proficiency correlates with the properties I test, a proficiency test was included in the test together with the main experiment. The age of the participants provides an indication of their general proficiency in English, however one cannot be sure that every participants' proficiency correlates with the expected level of proficiency. Thus, a proficiency test was used to establish whether or not the groups of participants should be divided differently than the age groups alone.

The proficiency test used in the current study is a subset of a standardized Oxford proficiency test. The test has been used in other SLA studies, such as Jensen (2016) and Slabakova and Garcia Mayo (2015). The proficiency test is a multiple-choice task where the participants must fill in the blank spots in the presented sentences in order to make the sentences correct, like in (15).

- (15) 1) Water \_\_\_\_\_ at a temperature of 100° C.  
a. is to boil                      b. is boiling                      c. boils

In the current study, compared to Jensen (2016) and Slabakova and Garcia Mayo (2015), some changes were made to the test before use. One change that was made concerned the lexical content in some of the sentences. Some of the sentences contained lexical items

that could be replaced with even more frequent and familiar words, and thus changes were made to those sentences. In other words, some of the words in some of the sentences were changed from less familiar words to more familiar words. The new words, however, did not change the grammatical meaning in the sentences.

The second change that was made was adding some background information. The proficiency test contains sentences about the famous boxer Muhammad Ali and the history of airplanes. Prior to the passage about Muhammad Ali, some information concerning who he is and why he is famous was added, and prior to the passage about airplanes some background facts were added. The information was added because I realised that the participants, due to their young age, probably did not have this knowledge and in order to avoid confusion due to unfamiliar facts I chose to add this information. The information was given in Norwegian, both orally and in writing. The oral information was given before the test started. In addition, the written information occurred within the test immediately prior to the relevant test sentences. The proficiency test was shortened as well. Relative to what the two studies referred to used, the last 11 sentences were taken out of the test. All in all, the proficiency test contained 29 fill-in-the-blanks tasks (see appendix 4).

The layout of the proficiency test seemed familiar to the participants. Whereas the youngest participants asked for some clarification during the AJT, they did not ask many questions concerning the proficiency test. This is probably due to the fact that multiple-choice tasks are widely used in schools, and therefore they are likely to have had to do multiple-choice tasks before.

A background questionnaire was added to the test in order to connect each answer to the correct age group and to cross check that the participants had Norwegian as their L1 and English as their L2. The participants had to reply on which class they were in and how old they were. In addition, they had to reply on their language situation, such as identifying their L1 and L2. In order to avoid any confusion about these questions, they were asked in Norwegian using simple terminology.

## 4.4 The main experiment

In the following sections I discuss the procedure of the main experiment. This includes a presentation and discussion of the test sentences and the acceptability judgement task (AJT), and a discussion of the in-class procedure.

### 4.4.1 Sentences

The AJT contains 20 sentence pairs and five ungrammatical fillers, which means that the AJT contains a total of 45 test sentences (see appendix 2). There are four different types of sentences: subject-initial and non-subject-initial declarative clauses with lexical verbs, subject-initial declaratives with 3<sup>rd</sup> person singular subjects and subject-initial declaratives with the past tense marking -ed. In addition, there are five ungrammatical fillers. The ungrammatical fillers are added for two reasons. Reason one is that they contribute to variety in the test, and thus help draw the attention of the participants away from figuring out what constructions they are being tested in. Reason two is that they help maintain the motivation for the youngest participants as they should be easy to recognize as ungrammatical even for beginners. Further, there are five sentence pairs of each sentence type, which means that the participants must judge ten sentences concerning the same grammatical construction where five are grammatical and the other five are ungrammatical. The different types of sentences are discussed in the following paragraphs.

The test sentences in the AJT are provided in pairs where one is grammatical and one is ungrammatical, see (16) to (19). The ungrammatical fillers are not provided in pairs, they only appear one time each, see (20).

(16) *3<sup>rd</sup> person singular subject*

The teacher talks about mathematics and numbers.

\*The teacher talk about mathematics and numbers.

- (17) *Past tense*  
The baker **baked** a cake two hours ago.  
\*The baker **bake** a cake two hours ago.
- (18) *Non-subject initial clauses, verb movement*  
Last night the girl opened a present from her dad.  
\* Last night opened the girl a present from her dad.
- (19) *Subject-initial clauses, verb movement*  
The girl always played soccer with her brother.  
\* The girl played always soccer with her brother.
- (20) *Ungrammatical filler*  
\* Girl cake the baked a for her mother and sister

The sentence pairs do not appear together in the test; they are spread out throughout the test in a pseudo-randomized order. The purpose of spreading out the sentence pairs is in order to avoid priming from one structure to another and immediate comparisons of the two varieties of the sentences.

Before the discussion of each sentence type, some common features that apply to all the test sentences need to be brought to attention. Following Dabrowska (2010:5), researchers must acknowledge that acceptance judgements are likely to be influenced by extragrammatical factors, such as length, lexical content and plausibility; hence it is recommended to neutralize these factors whenever possible. Firstly, in order to maintain approximately the same length on every sentence in the test, all the sentences consist of 10-12 syllables. Secondly, since the participants are at a relatively early stage of their L2 acquisition, the words used when constructing the test sentences are all taken from a word frequency list (Word Frequency 2014) in order to make sure that the words are frequently used in the English language. It is more likely that the participants understand the context in the sentences when the words are frequent words they are likely to already be familiar with. This should avoid confusion about understanding the message in each sentence, and rather move the participants' focus on to judging the acceptance of each sentence. In correlations with the Norwegian schools' competence aims discussed in section 4.2, the test sentences

describe situations that should be familiar to the participants, which means they mostly describe situations that 9- to 13-year-olds can relate to.

#### **4.4.2 The acceptability judgement task**

The main part of the experiment is the acceptability judgement task (AJT). Ionin and Zyzik (2014) draw attention to the difference between the terms *grammaticality judgement task* and *acceptability judgement task* that are often used interchangeably in the literature. They refer to Cowart (1997) for an additional discussion of the terms. According to Cowart (1997:38), the term acceptability judgement is more appropriate than grammaticality judgement, as grammaticality is an abstract concept that is difficult, or even impossible, to test directly. Concerning grammaticality, a sentence is either grammatical or ungrammatical. However, sometimes even native speakers of a given language disagree when judging the grammaticality of sentences in their L1. Cowart (1997) therefore argues that acceptability judgement is more appropriate than grammaticality judgement.

Dabrowska (2010:4) provides a similar distinction between grammaticality and acceptability. She argues that ever since the work of Chomsky (1965), there is a commonly accepted distinction between the two terms among most linguists. The distinction is described by her as grammaticality being "... whether or not a sentence conforms to the rules of a grammar" and acceptability being "... the degree to which a sentence is judged by native speakers to be permissible in their language" (Dabrowska 2010:4). She also discusses the fact that native speakers may judge grammatical sentences as unacceptable and ungrammatical sentences as acceptable based on aspects like problems in processing the sentence, issues with semantic anomaly and the context in which the sentence is found (Dabrowska 2010:4). She concludes that researchers must rely on acceptability judgements in order to obtain falsifiable data, as grammaticality "... is not directly accessible to intuition" (Dabrowska 2010:4). Following Cowart (1997) and Dabrowska (2010), I use the term *acceptability judgement* throughout this thesis.

The main part in the test is the experiment itself, which is the AJT. This is the part in which I survey the participants' acceptance of the constructions discussed in sections 2.3.1 through 2.3.3. Ionin and Zyzik (2014:38) define an AJT as a task in which the participants are

asked to judge the grammatical acceptance of the presented sentences. Further they argue that traditional AJTs present isolated sentences without context, which means that presented sentences do not belong to the same context. Further they argue that traditional AJTs typically present one sentence at a time. However, in the current study the participants are presented five sentences at a time (see appendix 3). As discussed in section 4.4.1, the sentences are pseudo-randomized and therefore the fact that they are not presented one sentence at a time should not be problematic.

In the current AJT the participants are asked to judge the presented sentences on a Likert Scale from 1 to 4 with the four options presented in figure 2. The emoticons were added to the answer alternatives due to the fact that the participants are children, and the emoticons could make it more interesting for the children and even make it easier to understand the options. This way of judging sentences is a subjective way of measure, in which the participants are asked to judge the sentences as acceptable or unacceptable, and rate their level of confidence (Rebuschat 2013). The instructions were given in Norwegian, and the participants judged the sentences choosing a Norwegian expression for their acceptance of the sentences, as shown in figure 2.



Figure 2. The Likert scale in the AJT

I used a PowerPoint presentation to introduce the test to the participants. The presentation included explanations of the AJT, the proficiency test and the questionnaire. The presentation contained written information along with illustrations taken from the test, see appendix 1. The presentation informed the participants of what the test looked like, what kind of “questions” they would get, and an explanation of the alternatives in the Likert Scale, see figure 3.

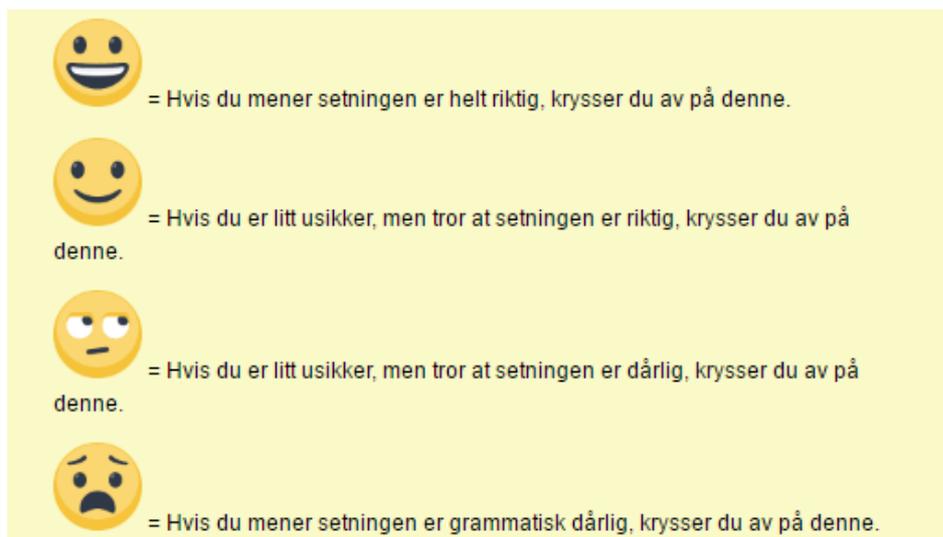


Figure 3: Explanation of the alternatives on the Likert Scale

Rebuschat (2013) discusses this type of subjective measure as one of the measurements in L2 research that is able to investigate the learner's implicit knowledge about the target language rather than the explicit knowledge. Rebuschat (2014:597) defines implicit learning as unconscious learning that leads to unconscious knowledge, and the learner may be unaware of his or her own knowledge about the given topic. Explicit learning, on the other hand, is defined as intentional learning that primarily results in conscious knowledge. The participants may lack metaknowledge of their L2 and perform better than they think, as they do not necessarily know *why* they judge the sentences as acceptable or unacceptable, even though they might perform very well on the AJT (Rebuschat 2014:608).

When carrying out L2 research, several choices must be made. I chose to carry out the experiment as an electronic AJT with a larger number of participants instead of a more extensive experiment with only a few participants, however, in the end I did not get the large number of participants I had hoped for (see section 4.2). Ionin and Zyzik (2014) mention production tasks as an alternative way of gathering L2 research data. They state that production arguably is the best way of getting the most direct information about a learner's linguistic knowledge (Ionin and Zyzik 2014:37). However, they also emphasize that production tasks have many limitations. One argument is that even though the learner does not produce a particular expression, it does not necessarily mean that the learner is unable to do so. In addition, production errors do not necessarily mean that the learner lacks linguistic knowledge (Ionin and Zyzik 2014:37). They also enumerate several other factors such as

avoidance, phonological complexity, and difficulty with retrieval from memory as possible sources of error. In addition to this, production of certain frequent expressions may be due to memorization rather than linguistic knowledge (Ionin and Zyzik 2014:37). These limitations are partially the reason I did not chose to conduct production tasks. An electronic AJT is also easier to conduct, especially in consideration with the limitation of time I had.

### **4.4.3 Procedure**

Two teachers from two different schools in Tromsø accepted the request to participate in the experiment, one for the Primary School, the 4<sup>th</sup> graders, and one for the Lower Secondary School, the 8<sup>th</sup> graders. The experiment was carried out during school hours, and I had one school hour with each class. I was present the whole time during the experiments with both groups. The procedure was close to identical with both groups. The only difference was that the youngest participants got a more detailed introduction to the experiment. Norwegian 8<sup>th</sup> graders are familiar with computers and with being tested in school as this is something they often experience in school. 4<sup>th</sup> graders on the other hand, as discussed in section 4.2, have attended school and the English subject for a substantial shorter period of time, and are likely to have less experience with these sorts of tasks.

Before the test started, the participants were given age appropriate verbal information about the implementation of the test together with a graphic presentation of how the test would go ahead (see appendix 1). At this point, any questions the participants had were answered until everybody expressed that they were confident to start the test. All the information was given in Norwegian in order to make sure that the participants understood what they were going to do.

The difference of the procedure mainly concerned the presentation I provided along with the PowerPoint prior to the test, as discussed above. Going through the presentation with the 8<sup>th</sup> graders, they quickly understood what to do and how to do it. I did not explain the added information in the proficiency test, which is discussed in section 4.3, as the 8<sup>th</sup> graders said they would rather read it themselves during the test. The 4<sup>th</sup> graders, on the other hand, got an oral explanation of this information during the presentation. In addition, they were informed that the information would appear within the test as well so they did not have to

memorize the facts. For this reason, I spent more time introducing the experiment with the 4<sup>th</sup> graders than with the 8<sup>th</sup> graders. After the introduction, I opened for questions and feedback. Both groups reported that they felt confident about the tasks.

Every participant had a computer each, and everybody in each group did the experiment at the same time. The 8<sup>th</sup> graders mostly sat quietly and clicked through the test without further complications. I only got a few questions from some of the participants in this group during the test. The 4<sup>th</sup> graders also sat quietly and clicked through the test. However, quite a few of the youngest participants apparently felt less confident during the test as some of them kept asking reassuring questions like “is this what I am supposed to do?”. I concluded that the reason for these questions was perhaps that they felt insecure while they wanted to perform as well as possible. I kept reassuring these participants that they were doing great by judging the sentences based on their intuition. However, I did not help them judge any sentences. I only reassured that they knew how to judge the sentences and asked them to follow their instinct as to whether the sentences were acceptable or unacceptable.

The first part of the test was the AJT. Every single sentence had to be judged in order to proceed in the test; it was obligatory to judge every test item in order to advance in the test. The survey programme marked every obligatory “questions” with an asterisk (\*), thus, the asterisks in appendix 4 does not demonstrate ungrammaticality. In order to make every test sentence obligatory to answer, the asterisk had to be there as it was impossible to remove it without removing the option for obligatory answers.

The participants were presented five sentences at a time, as discussed in section 4.4.2. They had to judge all five sentences individually, and then click the button “next”. An illustration of how the sentences were presented in the test is given in appendix 3. Furthermore, it was not possible to go back in the test. By clicking “next” the participants moved on and could not change the answers given earlier in the test. This is important because of the nature of the test. As is discussed in section 4.4.1, every grammatical test item has an ungrammatical equivalent. By not giving the option of going backwards in the test, the participants are unable to compare the two options before providing their judgement. Thus, they had to judge every sentence individually.

## 5 Results

The results are collected through the web based survey programme *Questback* and analysed through the statistics programme *R*. The results were then transferred into Excel to produce the tables and diagrams as presented in this chapter. The results are, however, not treated with statistical significance due to the small number of participants. The intention is to gather more data in the future in order to provide a sufficient amount of data, and then to process the data with statistical tools in order to prove the significance of the results. Therefore, in the current thesis, the results are presented in their simplicity.

The main focus in this chapter is to identify the differences across the proficiency groups in the way they judge the test sentences in the acceptability judgement task. Differences in the results will provide an indication of whether the different constructions develop differently, thus whether the results are supporting the hypothesis discussed in section 3.2. By analysing the results from the proficiency test, I decided that the groups did not have to be rearranged. The groups remained divided by age. Neither groups had participants that clearly stood out with higher or lower scores than the average for their group. Thus, the results are divided into two groups, the 4<sup>th</sup> graders and the 8<sup>th</sup> graders. In addition, a test group consisting of three university students is added to some of the conditions. All three of the participants in the test group are studying English literature at MA level at UiT The Arctic University of Norway, and are all in their mid-twenties. They also have Norwegian as their L1 and English as their L2. The results of the test group are added to the following sections in order to compare them with the 4<sup>th</sup> graders' and 8<sup>th</sup> graders' results. By doing so, it is possible to examine whether the development of proficiency follows the expected pattern.

### 5.1 The acceptability judgement test

As discussed in section 4.4.2, the acceptability judgement task consists of 20 sentence pairs and 5 ungrammatical fillers, which means a total of 45 test sentences. Every test sentence has a grammatical alternative and an ungrammatical alternative, but they are not presented together in the test. The participants are asked to judge the sentences by using a Likert Scale from 1 to 4 where the numbers are replaced by emoticons and Norwegian

explanations (see appendix 3 and section 4.4.2.). In the analysis, the rankings on the Likert Scale are represented by 1 being unacceptable and 4 being acceptable. The mean scores range on a scale from 1 to 4, where 1 and 2 represents *less acceptable* and 3 and 4 represents *more acceptable*. This means that a mean score close to 4 for the grammatical sentences indicates few errors among the participants, and likewise that a mean score close to 1 for the ungrammatical sentences indicates few errors among the participants.

In the following sections, I present the results from each tested construction, including the fillers. In section 5.1.1 the results from testing past tense -ed are presented. Further, in section 5.1.2 the results from the subject verb agreement are presented. And then, in section 5.1.3 the results from the two constructions regarding verb movement are presented. The fillers are accounted for in section 5.1.4.

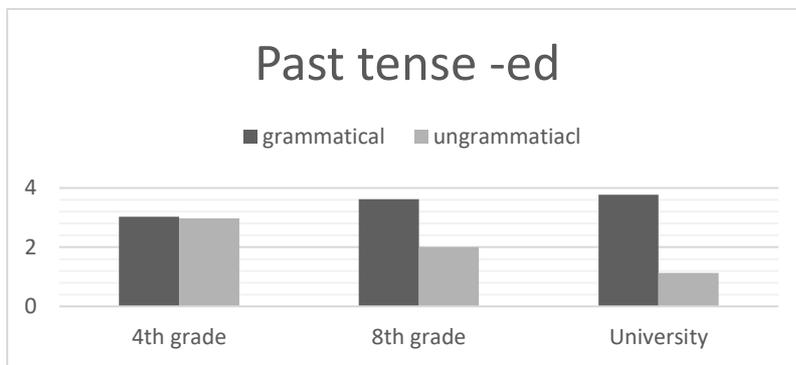
### 5.1.1 Past tense -ed

Table 2 shows the mean score from the participants' judgement of the test sentences with past tense -ed. The mean score for the 4<sup>th</sup> graders is nearly 3 for both grammatical and the ungrammatical past tense sentences. This means that they mostly ranked both grammatical and ungrammatical sentences as acceptable. The mean score for the 8<sup>th</sup> graders shows a noticeable difference concerning the past tense marker. Regarding the grammatical sentences, their mean score is close to 4, thus they most often ranked the grammatical sentences as acceptable. Regarding the ungrammatical sentences their mean score is 2, which means they most often ranked the ungrammatical sentences as unacceptable. The test group also mostly ranked the grammatical sentences as acceptable and likewise the ungrammatical sentences as unacceptable.

Past tense -ed	Grammatical	Ungrammatical
4 <sup>th</sup> grade	3,033333	2,973333
8 <sup>th</sup> grade	3,622222	2,000000
University	3,777778	1,133333

Table 2: Table with the mean score for the grammatical and ungrammatical judgement of past tense -ed.

The variance in acceptance is even better illustrated in bar chart 1, where the difference is visually represented. The 4<sup>th</sup> graders accept both grammatical sentences and ungrammatical sentences to the same level; there is no difference in performance. The 8<sup>th</sup> graders, on the other hand, show a considerable difference in performance. They accept the grammatical sentences and likewise rank the ungrammatical sentences as unacceptable. There is a positive development from the 4<sup>th</sup> graders to the 8<sup>th</sup> graders that indicates increased proficiency in past tense -ed as the mean score for the grammatical sentences increases and the mean score for the ungrammatical sentences decreases.



*Bar chart 1: Bar chart with the mean score for the grammatical and ungrammatical judgement of past tense -ed.*

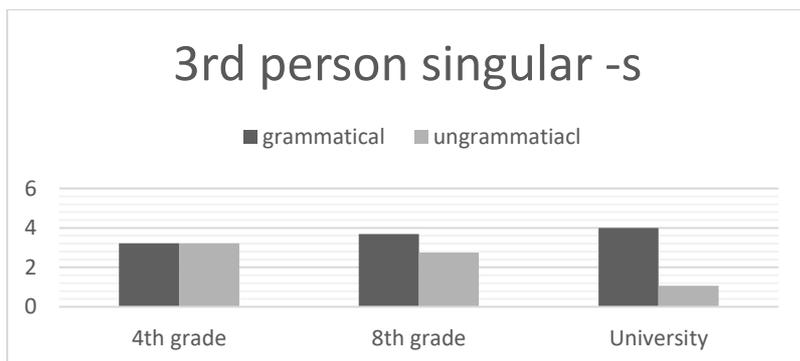
### **5.1.2 Subject verb agreement**

Table 3 shows the mean score from the participants' judgement of the test sentences testing 3<sup>rd</sup> person singular -s. Again, the 4<sup>th</sup> graders rank both the grammatical and ungrammatical sentences as acceptable. In fact, they have the exact same mean score for both the grammatical and ungrammatical sentences. The 8<sup>th</sup> graders' mean score for the grammatical sentences is close to 4, thus they mostly rank the grammatical sentences as acceptable. However, their mean score for the ungrammatical sentences is close to 3, which means that they often rank the ungrammatical sentences as acceptable as well. The test group accept all the grammatical sentences and rank the ungrammatical sentences as unacceptable.

3rd person sing. -s	Grammatical	Ungrammatical
4 <sup>th</sup> grade	3,213333	3,213333
8 <sup>th</sup> grade	3,693333	2,746667
University	4,000000	1,066667

*Table 3: Table with the mean score of the grammatical and ungrammatical judgement of the 3<sup>rd</sup> person singular -s.*

The variance is illustrated in bar chart 2. As the bar chart shows, there is no difference in the mean score among the 4<sup>th</sup> graders. The mean score for the 8<sup>th</sup> graders is slightly different, but they still often accept the ungrammatical sentences. The test group has very few errors both regarding the grammatical and ungrammatical sentences.



*Bar chart 2: Bar chart with the mean score of the grammatical and ungrammatical judgement of the 3<sup>rd</sup> person singular -s.*

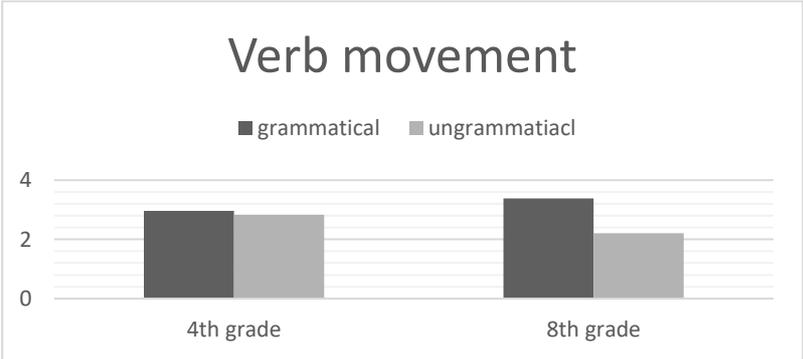
### 5.1.3 Narrow syntax

In the following section the results from both constructions testing narrow syntax is presented; both together and individually as non-subject initial declarative clauses and subject-initial declarative clauses. In this section the results from the test group are presented as an overall mean score for both constructions; see table 7 towards the end of this section.

Table 4 shows the mean score from the participants' judgement of the test sentences testing their proficiency with verb movement. The 4<sup>th</sup> graders perform at the same level, with a mean score close to 3 for both the grammatical sentences and the ungrammatical sentences, which means that they do quite a few mistakes with the ungrammatical sentences. The 8<sup>th</sup> graders perform close to 4 with the grammatical sentences, which indicates that they have few mistakes with the grammatical sentences. Regarding the ungrammatical sentences, the 8<sup>th</sup> graders perform with a mean score close to 2, which means that they do few mistakes with the ungrammatical sentences as well. Bar chart 3 also illustrates the difference in judgements for the grammatical and ungrammatical sentences.

Verb movement	Grammatical	Ungrammatical
4 <sup>th</sup> grade	2,966665	2,833333
8 <sup>th</sup> grade	3,386665	2,213334

Table 4: Table with the mean score of the grammatical and ungrammatical judgement of the verb movement.



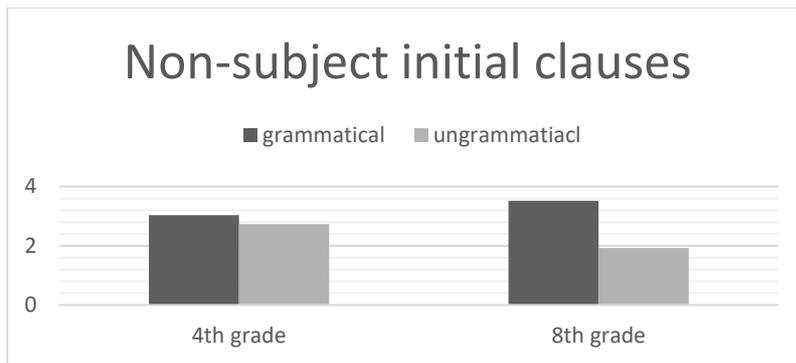
Bar chart 3: Bar chart with the mean score of the grammatical and ungrammatical judgement of the verb movement.

Table 5 shows the mean score from the participants' judgement of the test sentences testing verb movement in non-subject initial declarative sentences. The 4<sup>th</sup> graders' mean score for the grammatical sentences is higher than 3, thus they judge the grammatical sentences mostly as acceptable. Their mean score for the ungrammatical sentences are slightly lower, however it is still close to 3, which indicates that they still make many errors when judging the ungrammatical sentences. The 8<sup>th</sup> graders' mean score for the grammatical sentences is close to 4, which means they judge most of the grammatical sentences as acceptable. Regarding the ungrammatical sentences, the 8<sup>th</sup> graders make few errors as their mean score is below 2.

<b>Non-subject-initial</b>	<b>Grammatical</b>	<b>Ungrammatical</b>
<b>4<sup>th</sup> grade</b>	3,040000	2,733333
<b>8<sup>th</sup> grade</b>	3,520000	1,920000

*Table 5: Table with the mean score of the grammatical and ungrammatical judgement of the verb movement in non-subject-initial declarative sentences.*

Bar chart 4 better illustrates the difference between the mean scores. The 4<sup>th</sup> graders mostly accept the grammatical sentences, and even though there is a difference between their mean score for the grammatical and ungrammatical sentences, the difference is small, in which they still make many errors with the ungrammatical sentence. The 8<sup>th</sup> graders have few errors with the grammatical sentences, and likewise few errors with the ungrammatical sentences as their mean score for the ungrammatical sentences is below 2.



*Bar chart 4: Bar chart with the mean score of the grammatical and ungrammatical judgement of the verb movement in non-subject-initial declarative sentences.*

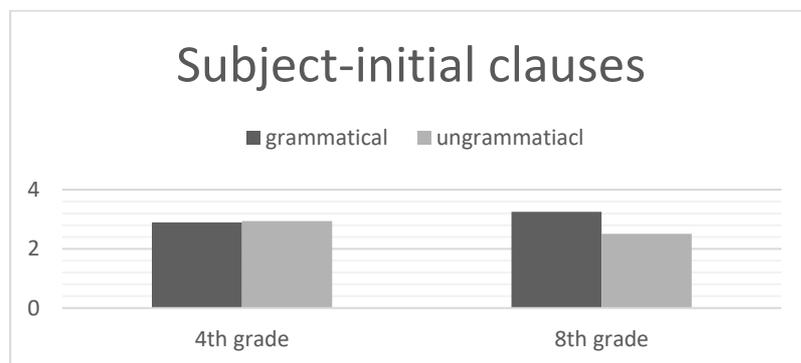
Table 6 shows the mean score from the participants' judgement of the test sentences testing verb movement in subject-initial declarative sentences. The 4<sup>th</sup> graders judge the grammatical sentences as mostly acceptable, as their mean score for the grammatical sentences is close to 3. However, they also judge the ungrammatical sentences as acceptable with close to the same mean score. The 8<sup>th</sup> graders judge the grammatical sentences as acceptable as their mean score is close to 3. However, their mean score for the ungrammatical sentences is also close to 3, which indicates that they still accept many ungrammatical sentences within this construction.

<b>Subject-initial</b>	<b>Grammatical</b>	<b>Ungrammatical</b>
<b>4<sup>th</sup> grade</b>	2,893333	2,933333
<b>8<sup>th</sup> grade</b>	3,253333	2,506667

*Table 6: Table with the mean score of the grammatical and ungrammatical judgement of the verb movement in subject-initial declarative sentences.*

The difference is better illustrated in bar chart 5. As the mean scores in table 3 show, the 4<sup>th</sup> graders accept approximately the same number of sentences of both the grammatical and ungrammatical sentences. The 8<sup>th</sup> graders judge the grammatical sentences as acceptable, however the difference between the grammatical and ungrammatical mean scores is quite

small. They still make lots of errors when judging the ungrammatical sentences.



*Bar chart 5: Bar chart with the mean score of the grammatical and ungrammatical judgement of the verb movement in subject-initial declarative sentences.*

Table 7 shows the test groups' mean score for the grammatical and ungrammatical sentences for both constructions above. They have few errors with both grammatical and ungrammatical sentences.

Verb movement	Grammatical	Ungrammatical
University	3,925926	1,066667

*Table 7: Table with the mean score for the grammatical and ungrammatical judgement of verb movement among the test group.*

#### 5.1.4 Filler sentences

As discussed in section 4.4.1, there are 5 ungrammatical filler sentences in the AJT. These were originally not meant to be a part of the results as they do not really test anything. However, because the 4<sup>th</sup> graders performed quite alike on all the constructions, with a mean

score close to 3 on both the grammatical and ungrammatical sentences, the results from the filler sentences are added here in table 8. The 8<sup>th</sup> graders and the test group have almost no errors at all with these sentences. The 4<sup>th</sup> graders' mean score is close to 2, which indicates that they make few errors with the ungrammatical filler sentences. The difference between the mean scores for the other constructions and the filler sentences indicates that the 4<sup>th</sup> graders do not just answer randomly on the judgement of the sentences in the AJT; it appears that they have been genuinely trying to judge the sentences.

<b>Filler</b>		<b>Ungrammatical</b>
<b>4<sup>th</sup> grade</b>		2,173333
<b>8<sup>th</sup> grade</b>		1,200000
<b>University</b>		1,000000

*Table 8: Table with the mean score of the ungrammatical judgement of the filler sentences.*

## 6 Discussion

In this chapter I discuss the material presented in the previous chapters. The main focus is to compare and discuss the results from the AJT according to the research questions and predictions in order to investigate whether the current study lends support to the BH or whether the results point in another direction. As discussed in chapter 3, the research hypothesis is that for Norwegian L1 speakers acquiring English as their L2, functional morphology is more difficult to acquire than narrow syntax. Further, as discussed in section 2.3, functional morphology is represented by two constructions; the subject verb agreement -s and the past tense -ed. Narrow syntax is represented by two syntactic constructions; verb movement in subject-initial and non-subject initial clauses. As discussed in chapter 3, the research questions and predictions are the following:

RQ1: Is functional morphology more difficult to acquire than narrow syntax in L2 acquisition?

RQ2: Are the two morphological conditions equally difficult in L2 acquisition?

Prediction 1: Based on the BH, prediction 1 suggests that functional morphology is more difficult to acquire than narrow syntax.

Prediction 2: Based on the BH, the two morphological conditions should individually be more difficult to acquire than the syntactic conditions.

When looking at the results of the participants' judgement of the test sentences, the mean scores for the ungrammatical judgements for each construction are the most important ones to look at. The reason for this is that judging a grammatical sentence as acceptable should not be as challenging as judging an ungrammatical sentence as ungrammatical. It is the judgements of the ungrammatical test sentences that show whether or not the participants are able to spot the errors, hence whether or not they have acquired conscious and/or unconscious knowledge about the constructions. Further, the results from the 8<sup>th</sup> graders are essentially the results that are given the most focus throughout the discussion. The results from the AJT

indicate that the 4<sup>th</sup> graders perform quite alike on all the constructions; thus, it is the results from the 8<sup>th</sup> graders' that show the development of the acquisition of the constructions. The 4<sup>th</sup> graders' results will be discussed at some level, but the results from the 8<sup>th</sup> graders are given more attention throughout this chapter. In section 6.1, the research questions are discussed, and in section 6.2, the BH is discussed with respect to L2 teaching.

## **6.1 Discussing RQ1 and RQ2**

In order to answer research question 1 and 2, the results from the morphological conditions need to be compared with the results from the syntactic conditions. As established in the paragraphs above, the most important judgements are those of the ungrammatical sentences. In the following paragraphs, the results from the four constructions are discussed in more detail in order to investigate prediction 1 and 2.

### **6.1.1 The morphological conditions**

In this section, results from the sentences testing the two morphological conditions are discussed; the sentences testing the 3<sup>rd</sup> person agreement -s and the sentences testing the past tense marker -ed.

First, the results from the subject verb agreement is discussed. Jensen (2016) argues that the agreement -s is more difficult to acquire than narrow syntax by Norwegian L1 speakers acquiring English as their L2, as her study concluded that her findings were in line with the BH. In the current study this is the case as well, see table 3 and bar chart 2. The 4<sup>th</sup> graders perform with the exact same mean score for the grammatical and ungrammatical sentences. Their mean score for this construction indicates that they do not recognize the ungrammatical sentences as unacceptable and it is likely that they do not have any certain consciousness about the 3<sup>rd</sup> person agreement -s. The 8<sup>th</sup> graders perform with few errors on the grammatical sentences; however, they do have quite a few errors concerning the ungrammatical sentences, as their mean score is close to 3. Thus, the results indicate that the

participants struggle with recognizing the missing agreement -s in the ungrammatical sentences. This construction is not acquired very well with either of the groups.

The second morphological construction to be discussed is the past tense marker -ed, see table 2 and bar chart 1. Both groups perform with few errors concerning the grammatical sentences within this construction. According to the BH, this is a feature that is presumed to be difficult when acquiring a second language. However, the results in the current study indicate quite clearly that the participants did not struggle a lot with this specific construction. Both the 4<sup>th</sup> graders and the 8<sup>th</sup> graders performed with few errors concerning the grammatical sentences, nonetheless, the 8<sup>th</sup> graders do perform better than the 4<sup>th</sup> graders. By examining the results from the ungrammatical sentences, the 8<sup>th</sup> graders consistently judge them as unacceptable, which indicates that they have acquired some level of consciousness about this construction. The 4<sup>th</sup> graders perform with a higher mean score with the ungrammatical sentences, which indicates that they do not possess the same level of consciousness concerning the past tense marker -ed. In the current study, the results from testing grammatical and ungrammatical sentences regarding the past tense marker -ed indicate that the 8<sup>th</sup> graders are quite capable of recognizing errors with this specific construction. According to the BH, this should be difficult to acquire, and more specifically, it should be more difficult to acquire than the constructions testing verb movement, as will be discussed in section 6.1.3.

The agreement -s is the construction that the 8<sup>th</sup> graders struggle the most with as they perform with the highest mean score for ungrammatical sentences compared with all the other constructions in the test (see table 9). By comparing the results for the agreement -s with the other morphological construction, the past tense -ed (see table 9), there is an observable difference between the judgements of the ungrammatical sentences. While they judge the ungrammatical past tense sentences as unacceptable, they judge the ungrammatical agreement sentences as more acceptable. Thus, this study indicates that the two morphological constructions posed by the BH is not equally difficult to acquire by Norwegian L1 speakers acquiring English as their L2. With respect to RQ2, this indicates that the agreement -s is more difficult to acquire than past tense -ed.

<b>8<sup>th</sup> graders</b>	<b>Ungrammatical</b>
Past tense -ed	2,000000
Agreement -s	2,746667
Non-subject-initial, verb movement	1,920000
Subject-initial, verb movement	2,506667

*Table 9: Table with the summary from the 8<sup>th</sup> graders' mean scores for the ungrammatical sentences on all four tested constructions.*

There are several possible reasons for the difference between the two morphological constructions. In the following paragraphs, I discuss this finding according to the theory of transfer from L1, see section 2.1.1, and whether the interpretability of the conditions plays a role, see section 2.1.2.

According to the Full Transfer / Full Access hypothesis (FT/FA) (Schwartz and Sprouse 1994, 1996), the L1 grammar is the initial state of the L2 grammar. The English past tense marker and the Norwegian past tense markers are quite alike, see section 2.3.2. Thus, the possibility that the construction transfers from Norwegian to English needs to be considered when reading the results. According to the Contrastive Analysis (CA) (Lado 1958), similarities between L1 and L2 should make the acquisition of L2 easier. With respect to the agreement -s, this is a construction that does not exist in Norwegian. According to both FT/FA and CA it makes sense that this construction is more difficult to acquire as the difference between L1 and L2 concerning this construction is vital. Thus, transfer from L1 is a possible reason for the difference in the results regarding the judgements of the test sentences testing the two morphological constructions. Even without assuming full transfer from L1, the past tense marker could be easier to acquire simply because it is so similar to the Norwegian past tense marker.

The differences regarding interpretability must also be considered when reading the results. Since the past tense marker is an interpretable feature, it is expected to be easier to

acquire, see section 2.1.2. The agreement marker, on the other hand, is an uninterpretable feature, and therefore not surprisingly more difficult, see section 2.1.2. In addition, the agreement marker is an uninterpretable feature that does not exist in the Norwegian language, see section 2.1.2 and section 2.3.1. According to the current thesis, the agreement -s is argued to be more difficult than the past tense -ed. Although the results for the morphological constructions are not entirely in line with the BH, there are sensible reasons for the differences, as mentioned above.

### **6.1.2 The syntactic conditions**

As presented in section 2.3.3, Westergaard (2003) argues that there is considerable transfer from the V2 word order, and that the sentences with topicalized adverbials are in place earlier than in sentences with initial objects. This seems to be the case in the results in the current thesis as well. The data from the current study lends support to Westergaard (2003). The participants perform with few errors on the sentences with topicalized adverbials, the non-subject initial sentences. The 8<sup>th</sup> graders' mean score (see table 9) for the ungrammatical sentences testing the non-subject initial verb movement is below 2, which evidently indicates that they continuously judge the ungrammatical sentences as unacceptable. Likewise, they continuously judge the grammatical sentences as grammatical as their mean score for the grammatical sentences is close to 4. Regarding the subject-initial sentences (see table 6 and 9), they perform with a slightly lower mean score for the grammatical sentences, and a somewhat higher mean score for the ungrammatical sentences. This indicates that they make more errors with both the grammatical and ungrammatical sentences concerning the subject-initial sentences. With respect to Westergaard (2003) this is expected, as the V2 rule for word order is difficult to unlearn for Norwegian L1 speakers acquiring English as L2. This study thus indicates that transfer of the V2 rule in sentences with topicalized adverbials is a problem, as the mean score for the ungrammatical subject-initial sentences is clearly higher than the mean score for the ungrammatical non-subject initial sentences (see table 9). This is interesting as it turns out that the participants struggle more with the subject-initial sentences than they do with the past tense sentences (see table 9). This specific finding is further discussed in section 6.1.3.

### **6.1.3 Does this study support the BH?**

As the results discussed in section 6.1.1 and 6.1.2 indicate, the participants struggle more with the subject-initial sentences than they do with the past tense sentences. This is surprising due to the BH's predictions that the morphological conditions should be more difficult than the syntactic conditions. Nevertheless, transfer from L1 (see section 2.1.1), interpretability (see section 2.1.2) and Westergaard's (2003) theory on unlearning V2 (see section 2.3.3) may provide some of the explanation for this specific finding. According to the BH, functional morphology should be more difficult to acquire than narrow syntax. The BH even emphasises the past tense -ed and the agreement -s to be the difficult ones. However, in the current study, the results indicate that the participants struggle more with the verb movement in subject-initial sentences than with the feature past tense -ed. This outcome is opposed to the prediction of the BH, namely that functional morphology is more difficult to acquire than narrow syntax.

By only looking at the results from the subject verb agreement, like Jensen (2016), compared with the results from the syntactic constructions, the current thesis would have lended support to the BH as the results then show that functional morphology is more difficult than narrow syntax. However, in the current study I tested the past tense feature as well, which resulted in somewhat conflicting results, therefore I cannot conclude that there is full support for the BH; only partially support. Due to the findings in the current study, the results indicate that the BH perhaps needs to be refined in the way it argues for what is more difficult to acquire.

## **6.2 The BH and L2 teaching**

The BH addresses language teaching as well. As a language teacher, it is beneficial to know what is difficult to acquire when acquiring an L2. Slabakova (2008, 2013, 2016) argues that functional morphology is more difficult than, for instance, syntax and semantics. Hence, it would be unfortunate to pay too much attention on syntax and semantics and too little attention of functional morphology. She argues that concerning language instructions, "our main focus is ultimately on classroom instruction" (2016:390).

Slabakova (2016) argues that when teaching an L2, teachers need to focus on form as well as meaning. She argues that turning the language into an object of attention may improve the end result of the L2 acquisition. She primarily argues in favour of a meaning-based approach on language teaching. Ellis and Shintani (2014:16) argue that meaning focused instruction is when the L2 learner processes the output and input that takes place in a communicative context; for example, in the classroom when the teacher, using the L2, talks about a topic that is not the L2. Nevertheless, Slabakova (2016) further argues that a task based approach may prove helpful. By explaining or instructing some of the grammatical features as they appear in the in-class communication, the teacher may help the learners acquire the features by providing context with meaning. Ellis and Shintani (2014:83) explain explicit instruction as a method where the teaching and learning process is *about* the language. In other words, when the teacher turns the language itself into a target of conscious learning, providing the learner with knowledge about the form of the language rather than just the meaning in the language.

Linguistic knowledge, in addition to pedagogical knowledge, is beneficial in language teaching as it can help the teachers know where to pay attention during the in-class language instructions. It is important for language teachers to be conscious about the difficult constructions of the L2. The BH is thus important for L2 teachers to be aware of, as the BH addresses the difficult parts of L2 acquisition. Knowledge of what is the most difficult constructions will help L2 teachers know which constructions they need to bring up in a form based instruction setting during the L2 teaching situation.

## 7 Conclusion

In this thesis, the Bottleneck Hypothesis (Slabakova 2008, 2013, 2016) has been tested with Norwegian L1 speakers acquiring English as their L2. The BH is a hypothesis concerning what is easy and what is hard to acquire when acquiring a second language. The prediction of the BH is that functional morphology is the bottleneck of L2 acquisition, and thus the difficult part. More specifically, the BH argues that the two morphological constructions subject verb agreement -s and past tense -ed are more difficult to acquire than narrow syntax. As the previous chapters show, past tense -ed seems to be easier to acquire than both subject verb agreement and verb movement in subject-initial clauses. According to the BH, past tense should be more difficult than narrow syntax. Thus, the current thesis does not solely support the claim posed by the BH as it concludes that one of the morphological constructions was in fact easier than one of the syntactic constructions.

Slabakova and Gajdos (2008) tested how the participating students calculated the German copula verb *sein* 'be' and its uninterpretable features of agreement. Through their study, they found that the participants did not become particularly better with the verb *sind* 'are' even after substantial exposure to German. They concluded that functional morphology is difficult to acquire, see section 2.2.1. Jensen (2016), similar to Slabakova and Gajdos (2008), tested a feature of uninterpretable agreement. She tested the English agreement -s against verb movement as narrow syntax, see section 2.2.1. She also found that the agreement -s appeared to be more difficult to acquire than narrow syntax.

In order to investigate the claim by the BH, I tested the two morphological constructions posed by the BH against two conditions within narrow syntax. The morphological constructions tested in the current thesis were subject verb agreement and past tense (cf. sections 2.3.1 and 2.3.2). The syntactic constructions were, as discussed in section 2.3.3, verb movement in subject-initial declarative clauses and non-subject initial declarative clauses. These constructions were tested on fifteen 4<sup>th</sup> graders and fifteen 8<sup>th</sup> graders, as discussed in section 4.2, by using an acceptability judgement task, as discussed in section 4.4.

Similar to Slabakova and Gajdos (2008) and Jensen (2016), the current study tested an uninterpretable feature of agreement; the agreement -s. Similar to the two studies referred to, the current study also found that uninterpretable agreement appeared difficult to acquire. If I

had only tested the agreement -s against narrow syntax, the conclusion in the current thesis would have been that it lent support to the BH. However, the current study also tested the other morphological condition posed by the BH, the past tense -ed, which was not necessarily more difficult than narrow syntax. Because of this, the conclusion in the current thesis is more complex.

By only looking at the subject verb agreement and the syntactic conditions, this study does indicate that functional morphology is more difficult to acquire in L2 acquisition, as discussed in section 6.1.3. However, the current study tested both morphological conditions, and the results indicate that past tense -ed is not necessarily more difficult to acquire than narrow syntax. More specifically, the results indicate that for Norwegian L1 speakers acquiring English as L2, past tense -ed is easier to acquire than verb movement in subject-initial clauses, the unlearning of the V2 rule (see section 2.3.3 for further information on the V2 rule). Due to the theory of transfer from L1 (see section 2.1.1), the FT/FA hypothesis (Schwartz and Sprouse 1994, 1996), and interpretability vs. uninterpretability (see section 2.1.2), the current study argues that there might be several reasons and influences that lead to the past tense -ed being easier than one of the syntactic conditions. Due to the difference in the results between the two syntactic conditions, perhaps the BH should mention Westergaard (2003) and the problem of unlearning the V2 rule when L1 is a V2 language and L2 is not. Further, regarding which functional morphological conditions are more difficult, the BH could make it even clearer that the level of difficulty is subject to several other circumstances concerning, among other things, transfer from L1 and interpretability.

In summary, there are several questions to be answered regarding what is hard and what is easy to acquire in L2 acquisition. The current thesis does lend some support to the BH by concluding that subject-verb agreement is more difficult to acquire than verb movement. Nevertheless, the current thesis also concludes that the English past tense marker is not particularly difficult to acquire by Norwegian L1 speakers, and even easier to acquire than verb movement across an adverb in subject-initial sentences; the unlearning of the V2 rule. Therefore, I suggest that the BH may need some more research and refining in order to improve the preciseness on what is easy and what is hard to acquire in L2 acquisition. Nevertheless, the BH is an important contribute to the linguistic field, as it provides insight in the cognitive process that happens when a learner acquires an L2, and in addition, it provides helpful knowledge to L2 teachers as to where they should pay extra attention during the teaching situation. Furthermore, it would be interesting to test the BH with other languages in

order to investigate whether the same features are the difficult ones. It would also be interesting to test the morphological conditions against other domains than narrow syntax. In addition, it would be useful to try other methods when testing the BH in the future, in order to see whether the results are similar or when the method is different.

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## Appendix 1 – The instructions prior to the test



**UIT**  
NORGES  
ARKTISKE  
UNIVERSITET

# Språktest

## Velkommen til språktest!

Denne testen består av 3 deler.

**Del 1:**

Her skal du rangere 45 engelske setninger på en skala fra 1 til 4, der 1 er best og 4 er dårligst, ettersom om du mener setningene er grammatisk riktig eller ikke.

 = Hvis du mener setningen er helt riktig, krysser du av på denne.

 = Hvis du er litt usikker, men tror at setningen er riktig, krysser du av på denne.

 = Hvis du er litt usikker, men tror at setningen er dårlig, krysser du av på denne.

 = Hvis du mener setningen er grammatisk dårlig, krysser du av på denne.

## Del 2:

Her skal du velge det alternativet som du mener gjør at setningen blir grammatisk riktig. Det er 29 setninger i denne delen. Du vil få tre alternativer til hver setning, der du velger den du mener er mest riktig.

Eksempel:

The sun \_\_\_\_ shining today.

- a) is
- b) are
- c) its

## Del 3:

Her vil du bli bedt om å fylle ut litt informasjon om deg selv og ditt språk.

Alle setningene er merket med en stjerne \*, det betyr at man må velge et svaralternativ for å kunne gå videre i testen.

**Lykke til!**

Din identitet vil holdes skjult.

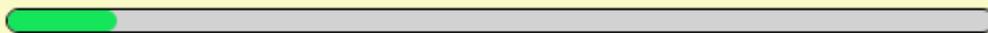
[Les om retningslinjer for personvern.](#) (Åpnes i nytt vindu)

Jeg har forstått hva jeg skal gjøre, og er klar til å starte.

Ja

Neste >>

11 % fullført



## Appendix 2 – The sentences

The sentences

	Grammatical	Ungrammatical
<b>Main clauses with local agreement, singular subjects</b>	<p>Lisa likes to read books about horses</p> <p>The boy takes the bus to school every day</p> <p>The dog runs around the house every morning</p> <p>Martin plays with the white cat every day</p> <p>The teacher talks about mathematics and numbers</p>	<p>*Lisa like to read books about horses</p> <p>*The boy take the bus to school every day</p> <p>*The dog run around the house every morning</p> <p>*Martin play with the white cat every day</p> <p>*The teacher talk about mathematics and numbers</p>
<b>Subject initial declarative main clauses, past tense</b>	<p>The girl played piano with her friend last week</p> <p>Samantha loved the book that she read last week</p> <p>The boy cleaned his messy bedroom yesterday</p> <p>Sofia called her grandmother yesterday</p> <p>The baker baked a cake two hours ago</p>	<p>*The girl play piano with her friend last week</p> <p>*Samantha love the book that she read last week</p> <p>*The boy clean his messy bedroom yesterday</p> <p>*Sofia call her grandmother yesterday</p> <p>*The baker bake a cake two hours ago</p>

<p><b>Non-subject-initial declarative main clauses, lexicality</b></p>	<p>Last night the girl opened a present from her dad</p> <p>Yesterday the teacher looked angry all day long</p> <p>Yesterday the boy cried because he fell</p> <p>Last month the children baked some bread at school</p> <p>Today Maria ate lunch at two o'clock</p>	<p>*Last night opened the girl a present from her dad</p> <p>*Yesterday looked the teacher angry all day long</p> <p>*Yesterday cried the boy because he fell</p> <p>*Last month baked the children some bread at school</p> <p>*Today ate Maria lunch at two o'clock</p>
<p><b>Subject-initial declarative main clauses, lexicality</b></p>	<p>The girl always played soccer with her brother</p> <p>The boy sometimes jumped up and down in his bed</p> <p>The children often walk to school together</p> <p>The mouse usually eats cheese for dinner</p> <p>Sara only likes to go swimming alone</p>	<p>*The girl played always soccer with her brother</p> <p>*The boy jumped sometimes up and down in his bed</p> <p>*The children walk often to school together</p> <p>*The mouse eats usually cheese for dinner</p> <p>*Sara likes only to go swimming alone</p>

<b>Filers, ungrammatical</b>		*Girl cake the baked a for her mother and sister  *Alexander when laughed funny clown the fell  *The dogs to like run around park in the  *Girl little the danced with sister and father her  *Dog the barked at little cat the all day long
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## Appendix 3 – Illustration of the acceptability judgement test

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# Språktest

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Del. 1:

\* Lisa likes to read books about horses.

			
<input type="radio"/>	<input type="radio"/> Litt	<input type="radio"/> Litt	<input type="radio"/> Veldig
Perfekt	bra	dårlig	dårlig

\* The girl play piano with her friend last week.

			
<input type="radio"/>	<input type="radio"/> Litt	<input type="radio"/> Litt	<input type="radio"/> Veldig
Perfekt	bra	dårlig	dårlig

---

\* Last night the girl opened a present from her dad.

			
<input type="radio"/>	<input type="radio"/> Litt	<input type="radio"/> Litt	<input type="radio"/> Veldig
Perfekt	bra	dårlig	dårlig

\* The girl played always soccer with her brother.



Perfekt



Litt

bra



Litt

dårlig



Veldig

dårlig

\* Girl the baked cake a for her mother and sister.



Perfekt



Litt

bra



Litt

dårlig

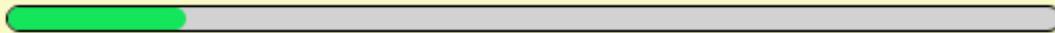


Veldig

dårlig

Neste >>

17 % fullført



## Appendix 4 – The proficiency test

### The Proficiency test

**Instructions:** Please complete the sentences by selecting the best answer from the available answers below.

1) Water \_\_\_\_\_ at a temperature of 100° C.

is to boil                  is boiling                  boils

2) In some countries \_\_\_\_\_ very hot all the time.<sup>[1]</sup><sub>[SEP]</sub>

there is                  is                  it is

3) In cold countries people wear thick clothes \_\_\_\_\_ warm.

for keeping                  to keep                  for to keep

4) In Norway people are always talking about \_\_\_\_\_.

a weather                  the weather                  weather

5) In Bergen \_\_\_\_\_ almost every day.

it rains                  there rains                  it raining

6) In the Sahara Desert there isn't \_\_\_\_\_ grass.

the                  some                  any

7) Some countries in Africa have \_\_\_\_\_ weather even in the cold season.

a warm                  the warm                  warm

8) In Norway \_\_\_\_\_ time of year is usually from December to February.

coldest                  the coldest                  colder

9) \_\_\_\_\_ people don't know what it's like in other countries.

The most                  Most of                  Most

10) Very \_\_\_\_\_ people can visit the King.

less                  little                  few

11) Mohammed Ali \_\_\_\_\_ his first world title fight in 1960.

has won                  won                  is winning

12) After he \_\_\_\_\_ an Olympic gold medal, he became a professional boxer.

had won                      have won                      was winning

13) His religious beliefs \_\_\_\_\_ change his name when he became a champion.

have made him              made him to              made him

14) If he \_\_\_\_\_ lost his first fight with Sonny Liston, no one would have been surprised.

has                              would have                      had

15) He has traveled a lot \_\_\_\_\_ as a boxer and as a world-famous personality.

both                              and                              or

16) He is very well known \_\_\_\_\_ the world.

all in                              all over                              in all

17) Many people \_\_\_\_\_ he was the greatest boxer of all time.

is believing                      are believing                      believe

18) To be the best \_\_\_\_\_ the world is not easy.

from                              in                              of

19) Like any top sportsman, Ali \_\_\_\_\_ train very hard.

had to                              must                              should

20) Even though he has now lost his title, people \_\_\_\_\_ always remember him as a champion.

would                              will                              did

**Read the following passage about the history of aviation and choose the best answer for each blank. Note that it is a continuous story.**

21) The history of \_\_\_\_\_ is

airplane                      the airplane                      an airplane

22) \_\_\_\_\_ short one.

quite a                      a quite                      quite

**23) For many centuries men \_\_\_\_\_ to fly,**

are trying                  try                  had tried

**24) but with \_\_\_\_\_ success.**

little                  few                  a little

**25) In the 19th century a few people succeeded \_\_\_\_\_ in balloons.**

to fly                  in flying                  into flying

**26) But it wasn't until the beginning of \_\_\_\_\_ century that anybody**

last                  next                  that

**27) \_\_\_\_\_ able to fly in a machine**

were                  is                  was

**28) \_\_\_\_\_ was heavier than air,**

who                  which                  what

**29) in other words, in \_\_\_\_\_ we now call a 'plane'. The first people to achieve**

who                  which                  what

## Appendix 5 – Declaration of consent

### Forespørsel om deltakelse i forskningsprosjektet

«Hva er vanskelig å lære når vi lærer engelsk som andrespråk?»



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### Bakgrunn og formål

Jeg er en mastergradsstudent på lektorutdanningen ved UiT Norges Arktiske Universitet som skal skrive min masteroppgave innenfor engelsk lingvistikk og andrespråkstilegnelse. Jeg søker deltakere til mitt forskningsprosjekt, der jeg ønsker å identifisere hva som er vanskelig å tilegne seg når man lærer engelsk som andrespråk. Med utgangspunkt i dette søker jeg ca. 25 deltakere fra 4. trinn, og ca. 25 deltakere fra 8. trinn.

### Hva innebærer deltakelse i studien?

Selve undersøkelsen er en elektronisk undersøkelse som tar i underkant av en skoletime å gjennomføre. Undersøkelsen består av tre deler. I del 1 skal elevene rangere 45 setninger på en skala fra 1 til 4 utfra om de mener setningene er grammatiske. I del 2 blir elevene presentert ca. 30 setninger som mangler et ord eller en frase der elevene skal fylle inn riktig ord eller frase basert på fire alternativer. I del 3 skal elevene fylle ut litt informasjon om seg selv og sitt språk.

Elevene fyller ut skjema- og leverer gjennom det nettbaserte programmet QuestBack. Det er derfor ønskelig at alle har tilgang til hver sin PC, nettbrett eller smarttelefon slik at testen kan utføres samtidig. På den måten får alle elevene lik informasjon og kan stille spørsmål underveis hvis noe er uklart eller dersom de ønsker å trekke seg. Testen, inkludert informasjon og spørsmål, vil ta ca. én skoletime å gjennomføre. Undertegnede vil være tilstede under hele testen.

### Hva skjer med informasjonen om deg?

Alle personopplysninger vil bli behandlet anonymt og konfidensielt. Deltakerne vil på ingen måte kunne gjenkjennes i publikasjonen da QuestBack tilbyr helt anonyme besvarelser. Prosjektet skal etter planen avsluttes mai 2017.

## Frivillig deltakelse

Det er frivillig å delta i studien, og deltakerne kan underveis trekke sitt samtykke uten å oppgi noen grunn. Fordi den elektroniske undersøkelsen er helt anonym, er det ikke mulig å finne igjen enkeltbesvarelser etter at besvarelsen er levert, og det er derfor ikke mulig å trekke seg *etter* at besvarelsen er levert. Det er viktig å understreke at deltakelse i undersøkelsen på ingen måte har innvirkning på elevenes forhold til skolen eller skoleprestasjoner, dette gjelder også hvis man velger å trekke seg eller ikke ønsker å delta.

Studien er meldt til Personvernombudet for forskning, NSD - Norsk senter for forskningsdata AS, men regnes ikke som meldepliktig da det ikke behandles personsensitiv data.

Ta gjerne kontakt dersom dere ønsker mer informasjon om prosjektet, eller om dere har noen spørsmål.

Med vennlig hilsen,

Mirjam Jensen

Marit Westergaard

Mastergradsstudent

Veileder

UiT Norges Arktiske Universitet

Professor i engelsk språkvitenskap

UiT Norges Arktiske Universitet, Institutt for  
språkvitenskap

Tlf: XXXXXXXXX

Tlf: XXXXXXXXX

E-post: [XXXX@post.uit.no](mailto:XXXX@post.uit.no)

E-post: [XXXX@uit.no](mailto:XXXX@uit.no)

**Jeg har mottatt informasjon om studien, og er villig til å delta**

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Elevenes navn

Sted og dato

Foresattes underskrift

