Master's thesis

NTNU
Norwegian University of Science and Technology
Faculty of Humanities
Department of Language and Literature

Mia Sandanbråten

Subject-Verb Agreement in Proficient ESL Learners

A study on Norwegian students of English and their ability to detect subject-verb agreement errors across five different complex sentence structures

Master's thesis in MLSPRÅK

Supervisor: Associate Professor Anne Dahl

May 2020

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Kunnskap for en bedre verden

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Abstract

This study examined proficient Norwegian students of English L2 on their ability to detect subject-verb agreement across five conditions. Their results were compared to a control group consisting of native speakers of English, in order to determine whether the Norwegian students are less sensitive to subject-verb agreement than native speakers are. The second focus of this study was to see whether the Norwegian participants rated any of the five conditions differently. The five conditions were complex sentences that were structurally different from each other and assumed to be difficult for L2 learners of English. By investigating the five different sentence structures, this study assessed whether any structural factors affected the L2 learners' ability to detect subject-verb agreement errors. To test this, this study used and Acceptability Judgement Test which results were analysed through an 2x5 Repeated Measures ANOVA analysis. The results of the analysis showed a significant difference both between participant groups and between conditions. This result was caused by the fact that the natives had rated condition 3 (sentences with linear and structural distance between subject and verb) differently to the Norwegian participants, and differently to the other conditions. The Norwegian participants on the other hand, rated the conditions similarly to each other, and performed slightly better at detecting subject-verb agreement errors than the natives did. Consequently, the results indicate that the Norwegian participants were not less sensitive to subject-verb agreement errors than the natives, and moreover, that the Norwegians did not appear to be affected by the structural factors of the conditions.

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1.0 Introduction

Subject-verb agreement errors are a common problem in second language (L2) acquisition of all languages. These errors are generally found in all ages and levels of L2 learners, where even the otherwise relatively proficient L2 learners are known to produce subject-verb agreement errors. These grammatical errors do not appear to be L1 dependent as languages both with and without subject-verb agreement tend to produce mismatched agreement in their L2. For these reasons, subject-verb agreement errors are a particularly interesting topic to examine in second language acquisition.

This thesis examines Norwegian university students of English on their ability to detect subject-verb agreement errors across five different conditions. The main aim of this study is to first test if the participants make subject-verb agreement errors. Given that this study derives such results, the second aim will be to address the question of whether L2 learners' errors in subject-verb agreement may stem from problems in establishing the required syntactic agreement relationships. To test this, five different sentence structures (conditions) were made which all were complex sentence structures believed to be hard for L2 learners of English. The chosen sentence structures were based on second language acquisition literature and previous studies which analysed regularities within L2 subject-verb agreement errors (e.g. Garshol, 2019; Johansson, 2008).

A substantial amount of literature about English as a second language revolves around the L2 learner's struggle of acquiring and successfully applying English subject-verb agreement (see e.g. Slabakova, 2016; White, 2003). It is by now an established fact that L2 learners of English tend to make subject-verb agreement errors, where the omission of the third person marker 's' normally is regarded the most frequent one (Breiteneder, 2005; Neff et al., 2007). L2 learners' problems with subject-verb agreement do not seem tied up to first language, as L2 studies on participants with various first languages find subject-verb agreement errors across participants (Breiteneder, 2005). Thus, mismatched subject-verb agreement is a universal problem shared by all L2 learners, and their errors are believed to stem from at least one of three possible causes: Firstly, that the L2 learner might not have acquired the L2 syntactic information needed for subject-verb agreement. Secondly, the learner could have acquired the syntax, but might still struggle due to issues regarding her lexical access which cause problems when attempting to add morphological inflections. Lastly, even if the syntactic representations and the lexical access are developed adequately,

studies on L2 processing show that most L2 learners process language more slowly than native speakers, while also having capacity limitations (Slabakova, 2016).

There have by now been a few studies conducted concerning Norwegian learners of English L2, which all found that their participants produced mismatched subject-verb agreement (Garshol, 2019; Jensen et al., 2019; Johansson, 2008). One thing that these studies have in common is that they all included participants younger than 19 years old. In light of this, we already know that Norwegian teenagers are likely to make subject-verb agreement errors. Therefore, this thesis tests a different participant group consisting of proficient English learners who study English at university. When choosing a different participant group compared to previous Norwegian studies, this study has the potential of deriving results which might broaden our understanding of this L2 phenomenon.

To test the Norwegian participants on their ability to detect subject-verb agreement across the five different sentence structures, this study used an Acceptability Judgement Test. This method was suitable for this thesis for mainly two reasons: The Acceptability Judgement Tests allows you to derive data from a large number of participants, and secondly, it allows you to test participants' language intuition which decreases the probability of performance slips, which one normally expects more of in language production. The test was taken by two different participant groups where one group consisted of the Norwegian students of English L2 and the other group, functioning as a control group, consisted of native speakers of English.

In this thesis, chapter 2 presents relevant theoretical background about subject-verb agreement and its syntax, before giving an account of the acquisition of subject-verb agreement by addressing the internalization of L2 syntax and morphology. Next, second language processing will be accounted for in relation to the Missing Surface Inflection Hypothesis (Haznedar & Schwartz 1997; Prévost & White 2000) and the Bottleneck Hypothesis (Slabakova, 2008, 2013), before addressing previous Scandinavian studies on Subject-verb agreement. In chapter 3, the hypotheses of this study and the methodology it has used will be described and discussed, while chapter 4 will present the results of the Acceptability Judgement Test. In chapter 5, the results will be discussed in light of the hypotheses and further discussed in relation to previous studies and relevant theory. Lastly, chapter 6 will provide a summary and a conclusion of this thesis, and also offer suggestions on further research.

2.0 Theoretical Background

In this chapter, I give an account of subject-verb agreement (SVA) in English and Norwegian, and the syntax of SVA and affix lowering. Secondly, I discuss relevant factors of second language (L2) acquisition, with focus on the acquisition of syntax and the acquisition of morphology, before giving an account of L2 processing. Then, in section 2.3, I address previous Scandinavian research to give an overview of what we already know about subject-verb agreement errors made by Scandinavian learners of English L2.

2.1. Subject-verb agreement

2.1.1 Subject- verb agreement in Norwegian and English

Agreement is a wide-spread language phenomenon and occurs in over 70% of the world's languages (Mallinson & Blake, 1981). In Norwegian, there is no overt agreement between the subject and the verb (Holmberg, 1995, p. 3). This means that those who have Norwegian as their first language cannot rely on language transfer from their L1 in in order to acquire this phenomenon in L2. The differences between Norwegian and English when it comes to subject-verb agreement are illustrated by the examples below:

English:

I like to dance

He likes to dance

She likes to dance

Norwegian:

Jeg liker å danse

Han liker å danse

Hun liker å danse

The examples demonstrate how the Norwegian verb ‘liker’ is unaffected by different subjects and remains in the same form. The English verb ‘like’, however, changes its form to ‘likes’ in line with English subject-verb agreement rules for the third singular person. Unlike Norwegians, speakers of English are confronted with subject-verb agreement once every five seconds, and once in every 16 words (Acuña-Fariña, 2012, p. 259). In an English sentence, the subject and the verb must agree in person and in number. Agreement describes the grammatical relationship between two different words which are to match one another (Wilder, 2014, p. 262). For subject-verb agreement, this means that the verb is marked with person and matches the subject of the sentence in a finite clause. As a result of this, different subjects will evoke different verb forms. In English, the verb distinctions of subject-verb agreement affect the third singular person which has an attached ‘s’ or ‘es’ affix. An example of this is: “The boy runs”, where the subject ‘the boy’ is a third person singular subject which evokes the ‘s’ affix onto the verb.

Table 1

Present tense ‘run’

Singular	Verb, run	Plural	Verb, run
1st person	run	1st person	run
2nd person	run	2nd person	run
3rd person	runs	3rd Person	run

The verb ‘be’ has more distinct forms than the other English verbs. Unlike the others, this verb distinguishes between first, second, and third person in singular present tense (Greenbaum & Nelson, 2009, p. 125). The plural form of be ‘are’ is the same for first, second and third person. See table below:

Table 2

Present tense ‘be’

Singular	Verb, be	Plural	Verb, be
1st person	am	1st person	are
2nd person	are	2nd person	are
3rd person	is	3rd Person	are

Additionally, the verb ‘be’ has distinctions for the past tense where the forms ‘was’ and ‘were’ match different subjects. See table below.

Table 3

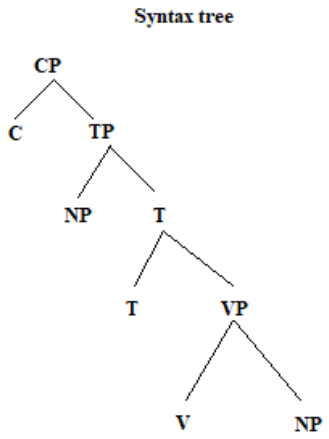
Past tense, ‘be’

Singular	Verb, be	Plural	Verb, be
1st person	Was	1st person	Were
2nd person	Were	2nd person	Were
3rd person	Was	3rd Person	Were

The English-specific agreement rules only affect the *finite verb*, with the exception of modal auxiliaries. A modal auxiliary is treated differently and does not have morphological inflections. An example is “He might go because he likes to dance”. The modal auxiliary ‘might’ does not have the third person inflection, whereas the verb ‘like’ does.

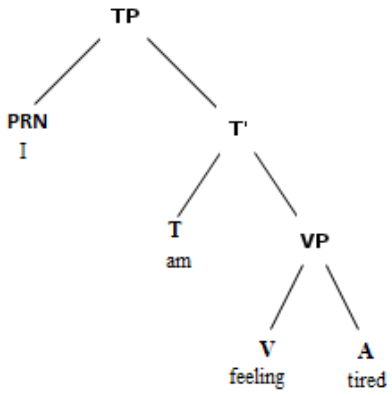
2.1.2 The syntax of subject-verb agreement and affix lowering

Syntactic structure has three main domains which can be observed in all languages: The Complementizer domain, the Tense domain and the Verb domain. The Complementizer domain (C domain) holds information about the context and adds connections to the discourse. This domain contains the Tense domain (T domain) which consist of information regarding the time of the event. The T domain contains the Verb domain (V domain) which again contains the event, alongside information about the participants of said event (Slabakova, 2016, p. 212) The syntactic structure of a sentence or a phrase can be exemplified by a syntax tree diagram:

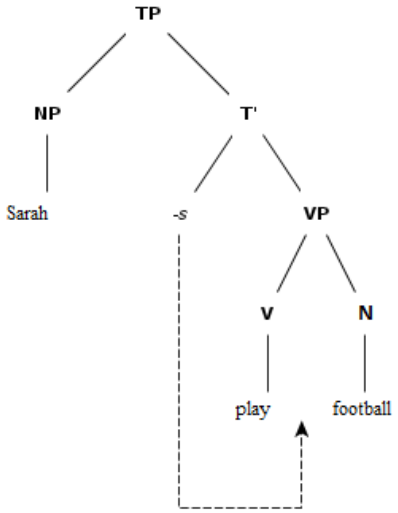


In English, the T position contains a tense affix. If the verb phrase has an auxiliary (or the light verbs *be* or *have*) the first or the only auxiliary will appear in the T position as it is marked with time and person (See example 1). However, in a finite clause that does not have auxiliaries, something called affix lowering, or affix hopping, occurs. In a finite verb phrase without any auxiliaries, the tense affix, such as ‘s’ or ‘ed’, is lowered onto the end of the main verb (Radford, 2004, p. 118). The process of affix lowering is exemplified below in example 2, where the affix ‘s’ is lowered to V.

Example 1, auxiliary in T position



Example 2, affix lowering from T to V



Unlike English, Norwegian is a V2-language, meaning that the finite verb is the second constituent with only one constituent prior to the verb in a declarative main clause. Similar to other V2-languages, this means that the verb is moved from V to T and then all the way to C (Adger, 2003, pp. 329–332). In Norwegian, affix lowering is not needed as the verb picks up tense in T before moving to C.

In short, English verbs are inflected for tense and agreement. For auxiliaries and light verbs, this occurs in T, while lexical verbs remain in V and get tense and agreement through affix lowering. Norwegian verbs are only inflected for tense and do not have overt agreement between subject and verb. In Norwegian, the tense inflection happens in T for both auxiliaries and lexical verbs, before they move to C. Consequently, those who have Norwegian as their first language cannot rely on language transfer from their L1 in in order to acquire English subject-verb agreement or affix lowering.

2.2 Second language acquisition

Second language acquisition refers to the process where a person learns a new language by internalizing the linguistic structures of that language, after already having acquired one's mother tongue (VanPatten & Benati, 2010, p. 2). It is a complicated process with several steps and components affected by various factors such as individual effort, determination, and motivation. In order to say that you have successfully acquired a second language, you would have to be both fluent and functional in that language, while having communicative skills which allows you to participate in an L2-based situation (Slabakova, 2016, p. 389).
For first language acquisition, practically all learners become successful and ultimately end up with the same end-result. However, for second language acquisition, this is not the case. Second language learners' ultimate attainment differs from person to person. Even if you compare people who share the same L1 and are learning the same L2, there will still be individual differences (White, 2003, p. 241). In order to look at the acquisition of subject-verb agreement, this thesis will focus on syntax and morphology, as these two areas must be internalized accurately in order to produce English subject-verb agreement.

2.2.1 Second language acquisition of syntax

This thesis uses the generative framework of syntax. This framework was primarily developed by Noam Chomsky (1965) and is based on the observation that language learners are not exposed to enough stimuli in order to explain their language attainment. This observation led Chomsky to develop a theory that claims that every human shares a common foundation for language acquisition, and that all languages adhere to a system of natural language which he calls Universal Grammar (1965). This Universal Grammar (UG) of natural language is what allows a new-born to learn any given language or languages in its surroundings.

Chomsky's theory of Universal Grammar further contains theories about language knowledge. Chomsky's understanding of language competence that has been important for the way in which we understand grammatical errors today. According to this theory, there is an important difference regarding language performance and language competence. In this context, the term competence refers to an individual's internalized systems of a language, while performance refers to the actual production of language (Chomsky 1965, p. 4). Chomsky explained how performance errors often are misproductions that do not stem from not having acquired the correct syntax, but rather stem from various factors such as lack of concentration, nervousness, tiredness, and so on. It is a person's competence that will show

his or hers internalized cognitive system, or their I-language as Chomsky calls it, which is why linguists normally attempt to look at I-language in order to study grammar (Radford, 2004, p. 7). Even though originally being a theory about L1 language, this seems relevant for L2 acquisition as well in the way it allows us to understand some errors as misproductions, or performance slips, that do not necessarily reflect the individual's internalized L2 knowledge.

Another important contribution to generative linguistics was Chomsky's theory of Principles-and-Parameters (1981). This theory has given linguistics an important framework for examining the process of L2 syntax acquisition, especially when it comes to the understanding of *what* needs to be learnt. According to his theory, language *principles* can be understood as universal qualities of natural language that are shared by all languages, while *parameters* are language variations that are found in languages. One example is the V2-parameter which means that the verb comes as the second constituent in a declarative sentence. This parameter is turned *on* in German (and other V2 languages such as Norwegian) and turned *off* in English, meaning that English does not follow the V2 rule (Slabakova, 2016, p. 225). Parameters are not merely turned *on* or *off* in a language – they often have two or more settings which all result in different grammar. The theory of Principles-and-Parameters (1981) has implications for how we understand grammatical learning. In line with this theory, an individual has access to UG which allows it to already have access to principles of natural language. Therefore, grammatical learning does not involve learning language principles, but involves learning the *parameters* of the target language (Radford, 2004, pp. 16-17). This means that in order to acquire a second language, the learner does not have to learn all the L2 syntax but must learn the specific parameters and settings of that language.

The understanding that L2 acquisition is a matter of learning L2 parametric variations has been up for debate. Linguists differ in their views on two sources: the transfer of L1 grammar, and the degree of UG access. For UG access, the question has been whether L2 learners have full access, partial access or no access at all while acquiring a second language. Regarding transfer of L1 grammar, linguists disagree about the level of transfer that happens from L1 to L2. Ranging from full transfer theories, to partial transfer, to the belief of no L1 transfer at all (Slabakova, 2016, p. 216). This thesis leans on the Full Transfer/Full Access theory developed by Schwartz and Sprouse (1994, 1996) which claims that the L2 learners initially transfer syntactic knowledge from their L1, while having full access to UG. When the L2 input is not compatible with the L1 syntax, the learner needs to reset that parameter, and can access principles of UG during the resetting process (White, 2003, p. 61).

As mentioned previously, Norwegian learners of English cannot transfer their L1 grammar in order to acquire subject-verb agreement, as Norwegian does not have overt subject-verb agreement marking. To learn English subject-verb agreement, the L2 learner needs to encounter the syntactic triggers for subject-verb agreement in the target language. In a sentence such as "He normally runs to the bus", the nominative subject 'he' is masculine, singular and in third person. This syntactic information triggers the third person singular s-inflection on the verb in English. Such a process can be described as a syntactic dependency, where the form of one category is dependent on another form (Slabakova, 2016, p. 183). The learner must be able to both detect syntactic triggers and react with the correct morphological inflections in order to produce correct syntactic agreement between the subject NP and the VP. One might assume that the process of acquiring linguistic knowledge ought to be quite straightforward if we assume that L2 learners have full access to UG while learning L2 syntax. However, we know that some areas of syntax are harder than others. A recent study shows that English SVA is harder to acquire for L2 learners than English word order (Jensen et al., 2019). One possible reason behind this could be that English agreement syntax is harder than the acquisition of L2 word-order because subject-verb agreement relies on both syntax *and* morphological inflections.

2.2.2 Second language acquisition of morphology

"Functional morphology is considered to be the locus of language variation" (Slabakova, 2016, p. 175). When saying this, Slabakova (2016) refers to how functional morphology carries features of a given language's grammatical functions and provides grammatical meaning. Morphology errors will have syntactic consequences and can make a sentence ungrammatical. This makes morphology the most important thing to acquire after learning vocabulary (Slabakova, 2016, p. 175). Functional morphology is where languages differ from each other, which complicates L2 acquisition as functional meaning will typically be represented differently in your mother tongue and your second language (Slabakova, 2016, p. 202). According to White (2003), morphology that carries information about number, case, gender, and agreement is used quite variably by English as second language (ESL) learners. They are likely to use the right morphology some of the time, omit the morphology altogether at times, and even use the wrong morphology (White, 2003, p. 178). In short, the usage of functional morphology is quite inconsistent, and it is an area that is hard to acquire for second language learners.

Not all morphemes are equally hard for L2 learners. Research on English L2 morphology acquisition shows that different morphemes have different levels of difficulty for the ESL learner, and that they acquire different morphemes on different stages of their ESL acquisition. Bailey, Madden and Krashen's (1974) results indicate that L2 learners, with a wide range of L1s, acquired inflectional morphemes in an ordered sequence where the 's' affix of plural nouns was acquired earlier than the third person singular verb maker 's'. Their results also showed that the L2 learners produced more errors with the verbal inflection 's' than with the plural noun 's' (Slabakova, 2016, p. 179). Bailey et al.'s study is important as its results indicate that the L2 learner does not necessarily have a problem with L2 morphology in general, but more specifically the inflectional morphology needed in order to produce correct English SVA.

When it comes to English L2 problems with inflectional morphology, studies show that the problem is rarely the wrong use of verbal inflection, but rather neglecting to use inflection, and thereby lacking the morphological third person affix 's'. Breiteneder (2005) and Neff et al. (2007), found results that indicate that the most common SVA error is inflectional omission. Breiteneder (2005) analysed an oral corpus of 50,000 spoken words. The participants of this study all came from Europe but varied between 21 different L1s. All participants could be considered to have reached their ultimate attainment of English as they no longer actively studied it. Breiteneder (2005) found that the participants omitted the third person singular marker 29 times out of 141. She also found 15 cases of overgeneralization, which is a significant amount, but nonetheless only half of the amount of omission mistakes (Breiteneder, 2005, pp. 8-9). Neff et al. (2007) conducted a study in which they examined the Spanish subsection of the ICLE corpus. Their study collected English L2 errors made by native speakers of Spanish. In their analysis, they reported 108 cases of subject-verb agreement errors where the participants had omitted the 's' morpheme in the third singular verb inflection. This type of agreement error accounted for 78% of the agreement errors, while the wrong use of verbal inflection only accounted for 22 % (Neff et al., 2007, p. 212). Interestingly, Spanish L1 speakers have subject-verb agreement in their native language, but still make subject-verb agreement errors in English. This phenomenon can also be detected in Breiteneder's study which found SVA errors in a corpus produced by participants of 21 different L1s. The two studies addressed in this paragraph thereby indicate that subject-verb agreement is a widespread universal problem, that does not seem to be L1 dependent.

Even native speakers of English have been found to make subject-verb agreement errors. There is mainly one type of error they commit, called agreement attraction errors. *Attraction* happens when there are more than one NP in a subject phrase and the speaker choses a verb form which agrees with the NP of close proximity rather than the head NP (Acuña-Fariña, 2012, p. 257). One example of this is: "The pen we use to sign contracts are in the drawer over there". In such a sentence, the verb 'be' is inflected for plural, which would agree with the plural NP 'contracts' and not the singular head NP 'the pen'. According to Acuña-Fariña (2012) experiments with native English speakers show that 13 % of complex noun phrases cause agreement errors. This means that given the right kind of syntactic conditions, even native speakers of English make subject-verb agreement errors. The fact that English L1 speakers produce agreement errors supports Chomsky's theory of Competence versus Performance, which addressed previously. There is no reason to believe that the agreement attraction errors mean that native English speakers lack syntactic or morphological competence. The attraction errors rather indicate that performance slips occur, and that these do not directly reflect a speaker's underlying language representations.

2.2.3 L2 Processing

So far, this section about acquisition of L2 morphology has shown that functional morphology is an area of difficulty for the L2 learners, where the usage is quite inconsistent. Secondly, it has referred to studies which show that not all morphemes are equally hard for L2 learners, where the third person marker 's' affix is harder to learn than the plural noun marker 's'. It was then emphasized that inflectional omission is believed to be the most common SVA mistake made by L2 learners. Then, we briefly looked at native speakers of English, to demonstrate that even natives make SVA errors if a sentence has agreement attraction. Before moving forward with this thesis, it is necessary to look into *why* L2 learners of English struggle with SVA agreement and more specifically; functional morphology.

When making SVA mistakes, we can assume that the problem stems from three sources: (1) not fully developed language representations, (2) problems regarding lexical access, (3) problems due to slow processing (Slabakova, 2016, p. 395). Firstly, the learner must have acquired the syntactic information and the syntactic relationships needed for agreement. Secondly, the learner must have acquired morphological endings and, just as importantly, be able to map these onto the internalized syntactic information. Thirdly, even when having acquired the syntactic information and the morphological endings, processing problems might prevent the endings from being correctly applied during language production.

To process a word, the individual must have access to her mental lexicon where all the information about the given word is stored. In the mental lexicon she will also find roots, stems and morphemes alongside the rules for how to use them (syntax). To be able to process a functional morpheme, on the other hand, one cannot simply 'look up' this morpheme in one's mental lexicon, but will have to look at the whole sentence to evaluate acceptability (Slabakova, 2016, pp. 363–364). Studies from the 1990s and early 2000s found that morphosyntax brings difficulties for L2 learners, and that they never become native-like in their morphosyntactic processing (Slabakova, 2016, p. 364). However, a more recent study conducted by Rossi et al. (2006) documented comparable ERP effects in L2 speakers and native speakers. ERP is an abbreviation for "event-related brain potentials", which are derived by recording electric brain activity through a number of electrodes on a participant's scalp (Slabakova, 2016, p. 357). By using this method, Rossi et al. (2006) tested Germans who were late learners of Italian and Italians who were late learners of German. They found that the *highly proficient* learners showed native-like processing patterns when they were exposed to subject-verb agreement violations (Rossi et al., 2006, as cited in Slabakova, 2016, p. 366). This study indicates that some L2 learners can become native-like in processing, which was an important finding as earlier studies' results suggested that L2 learners could not become as proficient in L2 processing as natives.

Another interesting study on L2 processing showed that the distance between the sentence components that are to match one another in agreement will affect brain responses. Gillon-Dowens et al. (2010) found similar ERP results between natives and L2 speakers on sentences with short proximity of the agreeing elements, and different ERP results when exposing the participants to a sentence structure with greater distance between agreeing elements (Gillon-Dowens et al., 2010). What these different studies on language processing show us is that language processing has been believed to be substantially different between L1 speakers and L2 speakers. However, more and more studies indicate that the language processing is not that different from each other, especially when speaking of proficient L2 speakers. As L2 learners *can* become native-like, many believe that L2 learners process language in a similar way to native speakers, but that complex structures where the L2 speakers have to keep many sentence components in their short-term memory seem to be more difficult for the L2 speaker than the native speaker (Slabakova, 2016, p. 379). Even though the L2 learners process language in a similar way, McDonald (2006) suggested that L2 processing happens at a slower rate than L1 processing (McDonald, 2006). As the L2

processing system runs slower, and there seem to be less room in the working memory for L2 speakers, these aspects of L2 processing increase the risk of producing errors. In this way, even if an L2 learner has the perfect underlying syntactic representations available, capacity issues or slow processing might cause mistakes that are not in line with her L2 syntactic representations.

To further highlight why L2 learners struggle with L2 inflectional morphology, I will address two hypotheses which give possible explanations about why functional morphology is hard: The Missing Surface Inflection Hypothesis (MSIH) and the Bottleneck Hypothesis. Starting with the former, the Missing Surface Inflection Hypothesis (MSIH) by Haznedar and Schwartz (1997), and later revisited by Prévost and White (2000), suggests that the verbal third person 's' omission does not stem from a lack of syntactic knowledge. Prévost and White (2000) propose that L2 learners have acquired syntactical features through their native language, L2 input, or UG. However, the same L2 learners might not have developed their functional lexicon to a degree where retrieval of information goes rapidly and effortlessly. This leads them to have mapping issues between the functional lexicon and their syntactic representations. Due to these mapping issues, L2 learners often simplify the L2 language by sticking to a default form of a verb instead of using varied functional morphology. For English, an example could be using "was" like the past tense default form of "be", without checking for agreement between the subject and the verb (Slabakova, 2016, pp. 191-192). In short, the MSIH (1997, 2000) proposes that L2 learners might already have all the underlying syntactic representations they need to produce correct inflectional endings, but mapping issues between the syntax and the functional lexicon cause them to produce sentences with inflectional omission.

The second hypothesis I will address is the Bottleneck Hypothesis by Slabakova (2008, 2013). This hypothesis explains that functional morphology is the *bottleneck* of second language acquisition. When saying so, Slabakova proposes that we can imagine that an individual's L2 knowledge is stored inside of a bottle. On the inside, there is a mixture of all the syntax, semantics, pragmatics and functional morphology an individual has acquired. When the L2 learner is about to utilize her L2 linguistic system, she turns her bottle upside down attempting to squeeze out what she needs. As will be demonstrated by the illustration on the following page, and like the title of Slabakova's hypothesis suggests, functional morphology is the bottleneck of this bottle – the tight space (Slabakova, 2016, p. 402).

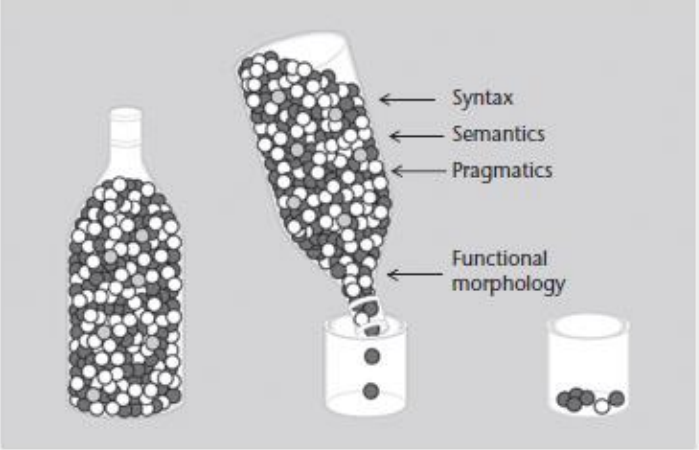


Illustration 1. The Bottleneck Hypothesis. Derived from *Second Language Acquisition*. (p. 403), by R. Slabakova, 2016, Oxford University Press.

According to the Bottleneck Hypothesis, functional morphology is both harder to acquire than other linguistic areas such as semantic or syntax, and simultaneously harder to utilise. After an adequate amount of practise, this "bottleneck" can become more flexible and eventually widen, which means that the retrieval of information becomes more automatic and thereby more effective (Slabakova, 2016, p. 403). Slabakova (2016) explains that there are many factors that contribute to the fact that functional morphology is difficult for the L2 learners. In general, they have slower and less automatic lexical access, slower processing of L2 language, and capacity limitations that can become overloaded during production (2016, p. 398). This means that even if the L2 functional lexicon is perfectly developed to the level of natives, inefficient lexical access and all-over slower processing make it harder for L2 learners to apply correct inflectional morphology (Slabakova, 2016, p. 395).

To round of this section about second language acquisition, one can conclude that subject-verb agreement depends on adequate syntactic representations, adequate and automatic lexical access, and an adequate speed of processing. Many ESL learners struggle to acquire English subject-verb agreement to a level where correct usage of inflectional morphology is consistent and stable. For most L2 learners, subject-verb agreement errors get produced quite regularly, and this phenomenon does not seem L1 dependent. With support from MSIH and the Bottleneck Hypothesis, subject-verb agreement errors do not necessarily reflect a lack of syntactic representations within the individual, but can often occur due to a retrieval issues where the L2 learner struggles to connect syntactic information to her

functional lexicon, or due to slow processing and capacity issues which make it harder for her to check and match agreement during language production.

2.3 Previous Scandinavian research

2.3.1 Thagg Fisher 1985

Thagg Fisher (1985) tested Swedish L1 university students, who all studied English, on subject-verb agreement. Like Norwegian, Swedish does not have subject-verb agreement, which means the Swedish learners of English L2 cannot rely on L1 transfer to acquire syntax and morphology required for subject-verb agreement. Thus, Swedish research on subject-verb agreement provides valuable information that is comparable to Norwegian. Thagg Fisher tested her participants on both oral production and written texts. The written texts consisted of two parts: an argumentative text and a translation task. Thagg Fisher found that the frequency of agreement errors in written texts was one error in every 481 words, and as high as one in every 166 words for oral production (Thagg Fisher, 1985, p. 69). Her results showed that there was a big difference in subject-verb agreement errors between the participants' written texts and their oral production, where the oral language had more than the double amount of mistakes. These findings support the MSIH and the Bottleneck Hypothesis and their idea that mistakes can come from problems in lexical access or slow processing. One would expect more mapping problems in unplanned language than in situations where you have time to retrieve and connect information from your language representations. Lastly, another interesting aspect of Thagg Fisher's results is that they indicate that SVA errors are even committed by those who attend higher education, meaning that this is not just a beginner's problem.

2.3.2 Källkvist & Petersson 2006

Källkvist & Petersson (2006) conducted a study which aimed to better understand Swedish learners' problems with SVA. According to them, SVA errors are the most frequent errors made by Swedish learners of English L2 (Källkvist & Petersson, 2006. p. 112). In their study, they investigated whether Swedish learners of English L2 from two different age groups, 14-years old and 17-years-old, were able to understand and explain the rules of English SVA. In order to test this, Källkvist & Petersson exposed the participants to three sentences which were supposed to work as examples of correct subject-verb agreement. Then, they asked their

participants to formulate a rule which could explain the grammatical rule demonstrated in the three sentences. According their study, many participants showed that they did not grasp subject-verb agreement, and that they had difficulties explaining the phenomenon. Källkvist and Petersson (2006) found that 59% of their 14-year-old participants and 54 % of their 17-years-old participants could not formulate a rule that explained the use of 'gets' and 'get' (Källkvist & Petersson, 2006, pp. 130-131). Källkvist & Petersson (2006) suggest that these results indicate that the participants lack syntactic representations of SVA, and that the SVA mistakes that are being made cannot be tied to production errors alone. On the other hand, one might argue that the results of Källkvist & Petersson study do not necessarily reflect the L2 learners' syntactic representations. Even though the participants could not explicitly formulate a rule, they might still have implicit syntactic knowledge about English SVA.

2.3.3 Johansson 2008

Johansson (2008) conducted a qualitative analysis of L2 English produced by Norwegian L1 university students. For his analysis, he used the Norwegian section of the ICLE corpus (Granger et al., 2009) which consisted of argumentative texts. Johansson introduced his section of subject-verb agreement by saying that SVA errors are the most common errors in English L2 production. However, he adds that many of the mistakes he noticed in the corpus seem like slips that could have been corrected by the writers (Johansson, 2008, p. 139). Johansson's study did not focus on the frequency of SVA errors, but rather analysed regularities of SVA errors within the corpus. One regularity that Johansson noticed was that the students often produced agreement errors if the head of the noun phrase was separated from the verb. One example of this would be "One of the reasons for the bad results were...". He also pointed out that a coordinated noun phrase in subject position can cause problems, and that a plural subject phrase such as "people" or "police" was often matched with a singular verb by the students (Johansson, 2008, pp. 139–140).

2.3.4 Garshol 2019

Lenka Garshol (2019) explored English subject-verb agreement errors made by Norwegian learners who attended upper secondary school and looked for possible regularities. Her results showed that the Norwegian students produced one agreement mistake in every 147 written words. Compared to Fisher's study, the Norwegian students had higher error frequency,

which could be explained by their lower age and education level (Garshol, 2019. p. 76). Interestingly, Garshol found that many of the subject-verb agreement errors were overproductions of the third person affix ‘s’, where the participants often used the third person singular form of a verb with a plural subject. This is quite contrary to similar studies from other countries, which report that the most common mistake is the omission of the third person singular marker ‘s’ (Breiteneder, 2005; Neff et al., 2007). Garshol suggests that the results of her study indicate that Norwegian learners use the third person inflection as their default form in complex contexts, which makes Norwegian learners of English atypical (Garshol, 2019, p. 74).

2.3.5 Jensen, Slabakova, Westergaard and Lundquist 2019

Jensen, Slabakova, Westergaard and Lundquist (2019) tested native Norwegian speakers’ knowledge of morphology and syntax in L2 English. In total, the study tested 60 students in two age groups: 15 – 18 years old and 11 – 12 years old. In their experiment they put Slabakova’s Bottleneck Hypothesis (2008, 2013) to the test. As previously stated, this hypothesis claims that functional morphology is the hardest part of English L2 acquisition (Jensen et al., 2019, pp. 3-4). In their study, Jensen and colleagues investigated two language phenomena that are different in Norwegian and English: (1) subject-verb agreement, and (2) word-order. Subject verb-agreement was used to test the participants’ knowledge of functional morphology in L2 English, and the (X)SVO word order in declarative sentences were used to test the participants’ L2 syntax knowledge.

The participants took an acceptability test and a proficiency test. In the proficiency test the participants scored between 11 – 38 (40 is the highest score) with a 27.3 average. The acceptability test showed that the participants were weaker at morphology than they were at syntax, as they made more morphological mistakes. Furthermore, their results also showed that some participants scored significantly higher on the proficiency test than the acceptability test, where they accepted sentences that had subject-verb agreement errors (Jensen et al, 2019, po. 15–16). This indicates that even proficient English L2 learners made morphological mistakes. In short, Jensen, Slabakova, Westergaard and Lundquist’s study supported the Bottleneck Hypothesis by showing that functional morphology was harder for the L2 learners than a word-order parameter that differed from the L2 learners’ native language.

In sum, the studies discussed in section 2.3 indicate that Scandinavian L2 learners of English make more SVA errors during unplanned language than planned language, and that even university students of English L2 make SVA mistakes. Furthermore, the studies show that certain sentence structures evoke more errors than others - such as coordinated subjects and sentences with linear distance between subject and verb. Interestingly, Garshol's study indicates that Norwegians make SVA mistakes that are atypical by overusing the third person singular 's' verb form. Additionally, this overuse implies that Norwegian learners of English use the third singular person as their default verb form. Lastly, Jensen et al. derived results that support the Bottleneck Hypothesis by showing that functional morphology was harder for the participants than the non-v2 word order.

3.0 Methodology

As explained in the introduction, this study examines Norwegian university students of English on their ability to detect English subject-verb agreement errors across five conditions. To test this, this study used an Acceptability Judgement Test (AJT), where the participants indicated acceptability on a given scale. This particular method was chosen as it allows us to measure participants' sensitivity to a grammatical phenomenon without relying on their ability to perform in their L2, which is typically believed to increase the possibility of errors and mere slips. Thus, the AJT was chosen in order to reduce disturbance factors, and rather focus on the participants' language intuitions. The AJT was presented to the participants in the form of an online survey which consisted of 80 sentences in total.

In this chapter, the early predictions of this study will be exposed through the hypotheses (3.1). Secondly, the target group for this study will be explained and argued for, alongside information about the control group (3.2), before describing the procedure of making the AJT and its test sentences in section 3.3. Towards the end of this chapter the survey design will be described and discussed before the pilot test and final alterations will be accounted for.

3.1 Hypotheses

Based on second language literature and previous research that analysed regularities within L2 learners' subject-verb agreement errors (e.g. Johansson 2008; Garshol 2019), one main hypothesis was made with four sub-hypotheses:

Main hypothesis:

The Norwegian L1 participants will be less sensitive to SVA errors than the English L1 participants.

Hypothesis 1.1:

If a sentence has linear distance between the subject and the verb, the Norwegian participants might accept subject-verb agreement errors.

Hypothesis 1.2:

Sentences with affix lowering will be more complicated for the Norwegian participants, making them accept SVA errors with lexical verbs to a greater extent than with auxiliaries.

Hypothesis 1.3:

If a sentence has both linear distance and structural distance, this might increase the probability of having the Norwegian participants accept subject-verb agreement errors even further.

Hypothesis 1.4:

If the subject of a sentence is coordinated, the Norwegian participants might accept a singular verb form, and thereby accept subject-verb agreement errors.

3.2 Participants

This study had two participant groups where one group consisted of Norwegian L1 university students who attend the five-year teacher education program with English as one of their subjects, while the other group consisted of native speakers of English. For convenience, the group of Norwegian students of English will be referred to as 'the Norwegians' and the group which consisted of native speakers of English will be referred to as 'the natives'. The focus of this thesis was the Norwegians, while the natives will be used mainly as a means of comparison.

The criteria of being a participant of the Norwegian target group was that they had to have Norwegian as their L1, attend the five-year teacher education program, have English as one of their subjects, and lastly, not have any diagnosis that could potentially impair their language development. A total of 32 Norwegian participants responded to the AJT. Two participants were excluded as they did not fit the criteria of the target group; one was a student of Nordic and not English, and one reported to have a diagnosis which could interfere with language development. Out of the 30 participants who were included in the results, 12 were male, 18 were female, and one participant did not wish to specify gender. All the Norwegian participants were recruited from the Norwegian University of Science and Technology (NTNU), and they had a mean age of 25.7. Out of these, 18 participants reported to have English as their main subject, while the remaining 12 had English as their second subject. With the exception of two participants, who reported to be between semester five and eight, all of the other participants were currently in their last year of their five-year study program.

The Norwegian target group can be described as a homogeneous group regarding education, age and assumed proficiency of English. Previous research has shown that both

secondary and upper secondary students make subject-verb agreement errors (Garshol, 2019: Jensen et al., 2019). Therefore, this study tested older and more educated participants to see whether these factors might make a difference. The Norwegian participants were chosen due to the length of their English L2 education, and because they were generally considered to represent a population with high levels of English proficiency. Furthermore, these participants are studying to become English teachers, which mean that their level of proficiency at detecting grammatical errors will presumably affect future English L2 learners. This makes this group an especially interesting group to investigate.

The control group consisted of 25 participants that all had English as their native language. Some of the participants reported that they had a second language such as Hebrew, French and Spanish, but none of them reported to have any knowledge of Norwegian. The mean age of these participants was 26.7 years, and they were recruited from a group on Reddit.com called "/r/SampleSize", which was a group made for polls and surveys to be posted. Three participants were excluded from the results as their native language was not English. All the participants who partook in the AJT, both the Norwegians and the natives, were informed about the nature of this study and their rights as participants of this study, before they responded to the AJT. The information and consent form was presented in the opening page of the AJT, and the participants had to give their consent if they wanted to proceed and partake (see appendix B). The information given was in line with the guidelines of the Norwegian Centre for Research Data, where the study was registered and approved before any participants were recruited.

3.3 Materials and procedure

On the basis of the hypotheses, five categories/types were made.
Sentences with:
(1) Long subject NPs with lexical verb
(2) Long subject NPs with auxiliaries
(3) Adverbial between subject and verb
(4) Coordinated subjects with a lexical verb
(5) Coordinated subjects with auxiliaries

All five categories had ten sentences each with five grammatical sentences and five ungrammatical sentences. This resulted in 50 target sentences, 25 grammatical and 25

ungrammatical (see appendix C and D). In addition, 30 filler sentences were included in the AJT, which resulted in 80 sentences in total.

Type 1 and 2 were created to test sub-hypothesis 1.1 and 1.2 by making sentences with a long subject NP to create linear distance between the subject NP and the VP. Furthermore, type 1 consisted of sentences with a lexical verb, while type 2 consisted of sentences with auxiliaries. This distinction allowed us to measure the effect of affix lowering. The test sentences of the two types were systematically varied with different subject forms across the sentences. There were two plural subject NPs, two singular subject NPs, and one possessive subject NP in both the five grammatical sentences and the five ungrammatical sentences. It was a conscious choice not to include personal pronouns as subjects in this category as the purpose of these two categories was to create linear distance with long subjects. The subjects chosen for type 1 and 2 varied between animate subjects and inanimate subjects, where two sentences had inanimate subjects and three sentences had animate subjects.

Type 4 and 5 were intended to test hypothesis 1.4 and 1.2 with test sentences which had coordinated subjects. Type 4 had sentences with a lexical verb while type 5 had auxiliaries. These two types also varied systematically in person and number. In both the grammatical and ungrammatical sentences, there were two sentences with two coordinated elements in the subject NP, two sentences with three coordinated elements, and one sentence with a possessive coordinated subject. Similarly to type 1 and 2, these sentences also varied in animate subjects and inanimate subject where there were three sentences with animate coordinated subjects, and two sentences with inanimate coordinated subjects.

Type 3, with an adverbial placement between the subject and the verb to create both linear and structural distance, was created to test the sub-hypothesis 1.3. The test sentences of this type balanced between singular and plural subjects. Additionally, this category also used personal pronouns as a type of subject. Personal pronouns were a good fit for this category as the adverbial was the main interfering element of the sentences which already created both linear and structural distance. Type 3 only included sentences with a lexical verb and did not have an additional category for sentences with auxiliaries. This decision was based on the fact that auxiliaries in English move to T-position and thus precede any adverbials. A sentence with an auxiliary would therefore not allow us to create sentences with an adverbial placement directly before the VP. Both the five grammatical sentences and the five ungrammatical sentences had one sentence with a personal pronoun subject, two sentences with a singular subject, one with a plural subject, and one with a possessive subject.

The 50 target sentences were mainly in present tense in order to make predicates which allowed the third person inflection. However, type 2 and 5 ‘with auxiliaries’ also included sentences in past tense, as the light verb “be” is marked with person even in past tense. The verbs were varied and balanced between the progressive, perfect and passive aspect, where each type had at least one sentence from each aspect.

The way in which subject NPs and verb forms were varied and balanced across the sentences was a conscious choice made to increase quality and validity. To further enhance validity in this study, a counterbalanced version of the original 50 test sentences was made (see appendix E). In the counterbalanced version, the morphology of the verbs changed, meaning that the sentences that had correct agreement would now be changed into mismatched agreement, and vice versa. However, the subjects and the overall context of the sentences remained the same. The counterbalanced version was created so that the participants by random would be sent to either a test version with the 50 original target sentences or to a test with the 50 counterbalanced test sentences when taking the AJT.

In addition to the original 50 test sentences and the 50 counterbalanced test sentences, 30 filler sentences were created which tested five grammatical aspects that were not of importance to this study: past tense, modal auxiliaries, adjectives, adverbials, and word order. The purpose of the filler sentences was to keep the participants from detecting which exact grammatical phenomenon they were tested on.

3.3.1 The Online Platform and the Survey Design

The AJT was distributed through the platform Nettskjema.no, with which NTNU has a data processing agreement. This online platform was a suitable match for an Acceptability Judgement Test as the page allowed questions to be answered by indicating acceptability on a given scale. In Nettskjema.no, the AJT was structured into three forms: the base form, test A and test B. The base form contained a consent and information form, followed by some background information questions regarding language knowledge and language usage (see appendix F). Test A consisted of the 50 original test sentences alongside the 30 fillers, while test B contained the 50 counterbalanced ones, with the same 30 fillers. The participants would be sent to either Test A or Test B by random after completing and submitting the base form, where all test sentences would be presented in a semi-randomized order. When it came to the overall design of the tests, Test A and Test B had identical structures where they both had

eight pages in total, with 10 test sentences per each page. Before the test sentences was introduced on the first page, the participants were given instructions and examples of how they were to indicate acceptability (see appendix G). To judge the sentences, the tests used a six-point Likert scale. For this scale, 6 was the highest rating and would indicate a very good sentence, while 1 was the lowest rating and indicated a very bad sentence. To demonstrate the range of the scale and to clarify how the participants were to indicate acceptability, an illustration was presented to the participants. See illustration:

In the instruction text, the participants were encouraged to use the numbers in-between to indicate if a sentence was not completely grammatical or completely ungrammatical. It was otherwise up to the participants' own intuition to interpret the in-between numbers, and they remained unlabelled as demonstrated in the illustration above. The participants were further given two example sentences which were to explain to the participants how they should use the Likert scale:

> For reference, a sentence like:
> "I usually go to the cinema on Fridays"
> Is a completely grammatical sentence and would be rated 6
>
> Whereas,
>
> "I on Fridays the cinema usually go"
> Is a completely ungrammatical sentence and would be rated 1

When using examples such as these, the participants could become biased and judge the sentences differently to what they would without being exposed to examples. When seeing that a sentence with wrong word order gets the example rating '1', the participant might deem SVA errors as somewhat less ungrammatical than word order errors, ending up using the Likert scale somewhat wrongly for the target sentences. This study chose to include examples

sentences in order to make it clear for the participants how they ought to use the scale. A sentence with ungrammatical word order was chosen as it would be undesirable to expose the participants to a target sentence with an SVA error. If the participants know what they are tested on, this might make them particularly aware of this exact grammatical phenomenon, making them perform better than they would in different circumstances. One might propose that it could have been better to use an example sentence with an adjective error in order to demonstrate an error that might be perceived as more in line with SVA errors. However, the pilot test, which will be accounted for towards the end of this chapter, showed that the participants seemed to use the Likert scale correctly, where sentences with SVA errors were given a variety of ratings, including the lowest rating '1'.

When it comes to the choice of method, the AJT was chosen as it is known for its ability to reduce disturbance factors which typically appear when testing explicit language knowledge. If the participants were to produce texts or take part in oral conversation, one expects to see more performance slips as the participants are performing in their L2. Acceptability tests, on the other hand, rely on the participants' intuitions when being exposed to a sentence, which gives us a more direct way of accessing the participants' syntactic knowledge. Like all research designs, this method of data collection can potentially create a few issues. Firstly, as this test presented sentences in isolation, the participants might have rejected a sentence they otherwise would except by reading the sentence in a coherent context. Secondly, there is no way of knowing the reason behind a participant's judgement of a sentence. The participant might for instance react to the punctuation of a sentence, and thereby give the sentence a low rating. To reduce this disturbance factor, the participants were given written instructions in the introduction of the test to ignore punctuation altogether as this was not of importance to this study. Furthermore, the nature of this study might increase the probability of having a participant reject a grammatical sentence. As this study aimed to examine structural effects on subject-verb agreement, some of the test sentences which were produced to create linear or structural distance might be rejected for being information heavy and inefficient. In order to reduce this possibility, the test sentences have been both re-edited and pilot tested to make them not only grammatical, but also as acceptable as possible. Additionally, to test that the participants are rejecting the sentences because of mismatched SVA, and not due to other factors, this study could have asked the participants to correct the sentences they rejected. However, this would have made the test quite time consuming for the participants, and it could also have invoked their explicit grammar knowledge in an

undesirable way. All in all, the AJT as a method was the preferable choice for this study as AJTs are assumed to test participants' underlying language competence.

3.4 Pilot test

The online survey was tested on three pilot testers before any respondents from the target group were recruited. They were asked to time their effort, and report back if any areas were unclear or confusing, or if they had suggestions of improvement. Due to their feedback, some background questions were changed to multiple choice to save time, and two test sentences were changed to avoid unfamiliar vocabular or grammatical structures that were not related to the focus of the study. Otherwise, the pilot testing showed that the AJT ran as anticipated.

4.0 Results

In this chapter, the results of the experiment are presented. In the results, 'L2s' refers to the Norwegian participants who have English as their L2, while 'natives' refers to the participants who have English as their native language. The first focus of the statistical analysis is to test the main hypothesis stated in section 3.1 by checking if the Norwegian participants (L2s) assess the test sentences differently from the control group (natives). If the L2s rates the ungrammatical conditions significantly higher than the natives, this will indicate that the Norwegians are less sensitive to SVA errors. The second focus will be to test the sub-hypothesis by testing if there are statistically significant differences between the five ungrammatical conditions. This will provide information about whether some sentence structures make English SVA harder for the Norwegian participants. The p-value is set to 0.05, meaning that any value that is lower than this number is a statistically significant value. The results chapter will begin with descriptives of the group results, continue with the statistical analysis of the group results, before showing descriptives of individual differences within the dataset.

The conditions were named and explained in section 3.3, but I will repeat them here for convenience:

Sentences with:
(1) Long subject NPs with lexical verb
(2) Long subject NPs with auxiliaries
(3) Adverbial between subject and verb
(4) Coordinated subjects with lexical verb
(5) Coordinated subjects with auxiliaries

4.1 Descriptives of group results

Table 4

Test sentences

Grammatical sentences		**Condition 1**	**Condition 2**	**Condition 3**	**Condition 4**	**Condition 5**
Mean	**L2s**	5.193	5.186	5.426	5.406	5.533
	Natives	5.512	5.480	5.584	5.800	5.712
Std.dev	**L2s**	1.273	1.277	0.934	1.199	0.904
	Natives	0.857	0.844	0.846	0.590	0.541

Ungrammatical sentences		**Condition 1**	**Condition 2**	**Condition 3**	**Condition 4**	**Condition 5**
Mean	**L2s**	2.440	2.360	2.473	2.300	2.353
	Natives	2.360	2.320	3.264	2.456	2.512
Std.dev	**L2s**	1.644	1.540	1.567	1.515	1.602
	Natives	1.584	1.545	1.698	1.623	1.711

Table 4 shows the raw scores' means and standard deviation of each condition in the AJT. In the AJT, the participant scored the sentences between 1–6 where 6 was the top score. Any values over 3.5 can be considered an accepted condition. As the table above demonstrated, all the grammatical conditions can be interpreted as accepted conditions, and all the ungrammatical sentences can be considered rejected .The table also demonstrates that the L2 participants generally score the grammatical sentences lower than what the native does, without there being a statistically significant difference between the two. Furthermore, the table demonstrates higher standard deviation values on grammatical sentences for the L2 group in comparison to the native group, meaning that they have rated these sentences differently. However, looking at the ungrammatical sentences, which are the focus of this study, the table demonstrates that the groups have rated the ungrammatical conditions similarly with similar standard deviation values.

Table 5

The filler sentences

Filler sentences		Grammatical	Ungrammatical
Mean	**L2s**	1.677	5.431
	Natives	2.232	5.784
Std.dev	**L2s**	0.932	0.961
	Natives	1.016	0.549

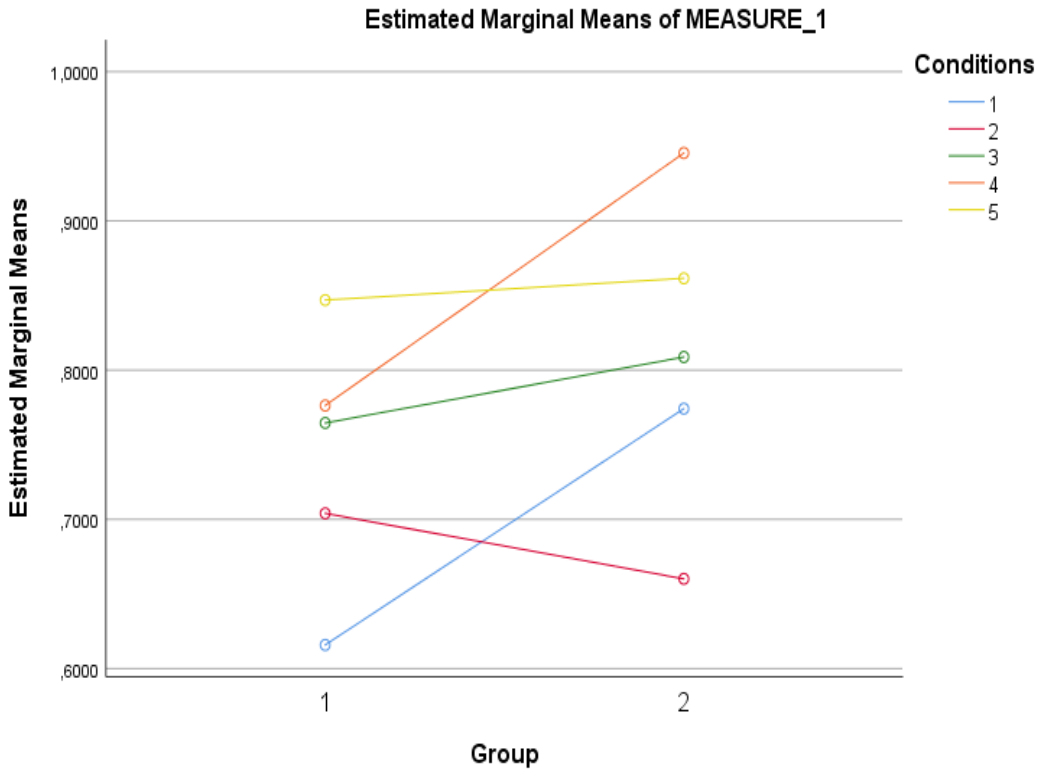
Table 5 shows the means and standard deviation values of the filler sentences. As we can see from the table, all ungrammatical filler sentences have been rejected by both groups, and they both accepted the grammatical sentences. When comparing the filler sentences to the target sentences, we see that the ungrammatical filler sentences were rated lower than the ungrammatical target sentences by the L2s.

4.2 The statistical analysis

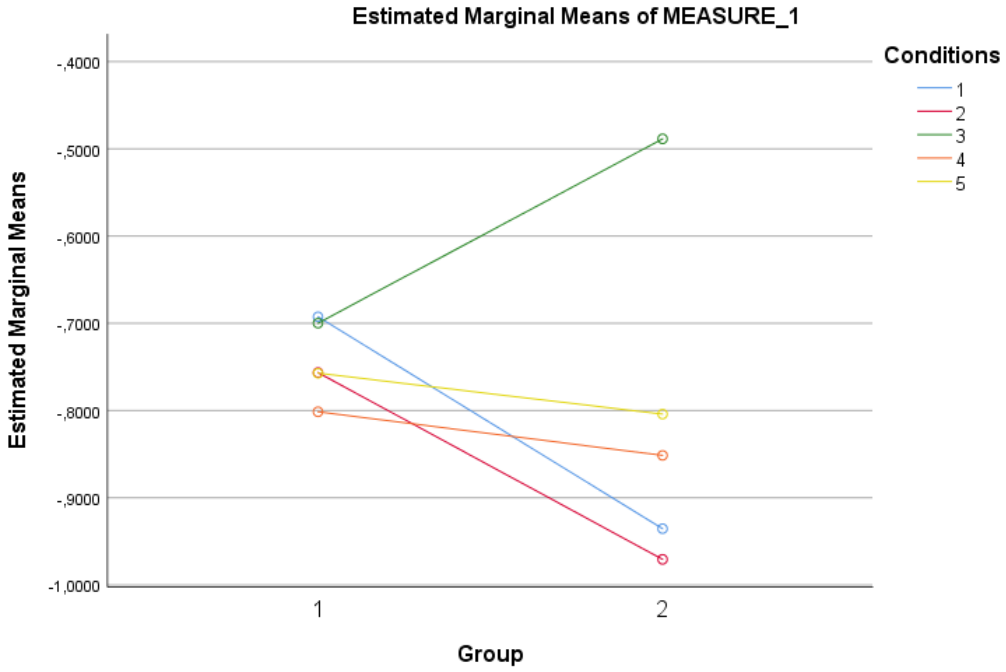
The raw scores were derived from Nettskjema.no and processed in Microsoft Excel. As will be demonstrated by the tables of individual differences towards the end of this chapter, it seemed as though the natives and the L2 group used the Likert scale differently. To minimize the effect of this, the raw scores were converted into z-scores across all grammatical and ungrammatical conditions before they were analysed in IBM SPSS Statistics. Due to the nature of this study's data material, there was conducted two 2x5 Repeated Measures ANOVA; one for the grammatical sentences, and one for the ungrammatical sentences. The reason behind this decision was that the grammatical sentences do no test subject-verb agreement, which means that any significant difference between the grammatical conditions would likely stem from other factors. It was deemed possible that the participants might accept the five conditions to various degrees since the conditions had different sentences structures where some were more complex than others.

The 2x5 repeated measures ANOVA for the grammatical sentences showed a significant Mauchly's Test of Sphericity ($p = .017$), which is why this study is reporting the Greenhouse-Geisser p-value. The Greenhouse-Geisser shows a significant within-subjects effect: $p = .001$ for conditions. There was no significant interaction between conditions and group: $p = .183$. The profile plots on the following page demonstrate how there were no

systematic difference between L2s and natives. There were however differences between conditions, but there is no reason to believe these differences have to do with subject-verb agreement.



The 2x5 Repeated Measures ANOVA for the ungrammatical sentences also had a significant Mauchly's Test of Sphericity: p = .000. The test of within-subjects effect showed two significant results where the Greenhouse-Geisser showed a main effect on condition: p = .001, and a significant interaction effect between group 1 and group 2: p = .009. As demonstrated in the profile plots below, these significant effects stem from a significant difference in acceptability ratings on condition 3, where natives rated this condition higher than L2s and higher than the other conditions. Besides condition 3, the profile plots show that the L2s and the natives rated the conditions similarly.



4.3 Descriptives of individual differences

Table 6

Individual differences in L2 group

Ungrammatical sentences

L2 group

Participant	condition 1	condition 2	condition 3	condition 4	condition 5	Total mean
1	3	3,8	3,6	3	3	3,28
2	1	2	1	1	1	1,2
3	1	1	1	1	1	1
4	2	2	2,4	2	1,8	2,04
5	3,4	3	3	2,6	3,2	3,04
6	2	2	2	2	2	2
7	1	2	1	1	2	1,4
8	1	1	1	1	1	1
9	2,4	2,2	2,4	2	2,8	2,36
10	3	3,4	3,2	5	6	4,12
11	1,8	2,2	1,2	3,2	3,6	2,4
12	1,8	1,2	1	1,4	1	1,28
13	2	1,2	1	1,4	1	1,32
14	3,4	3,6	2,8	2,6	3	3,08
15	1	1,2	1,4	1	1,2	1,16
16	2,4	2,6	4	2,2	2	2,64
17	3	2,2	2,4	2,2	2	2,36
18	5,4	4	4	4	4,4	4,36
19	3,4	3	2,8	2,2	3,8	3,04
20	1,4	2,4	1,4	2,4	1,8	1,88
21	2,2	2,4	4,2	2,2	3,6	2,92
22	1	1	1	1	1	1
23	3,4	3,8	2,8	3,6	3,2	3,36
24	2,8	1,2	1,8	1,2	1	1,6
25	4,4	4,4	4,6	4,4	4,4	4,44
26	2	2	3,2	1,6	1,2	2
27	4,4	2	4,2	4	1,2	3,16
28	3	2,2	3,2	2,4	2,2	2,6
29	1,8	2	2,8	1,8	1,8	2,04
30	2,8	3,8	3,8	3,6	3,4	3,48

This table consists of raw scores and shows L2s' individual differences on *ungrammatical* sentences. The green slots highlight the mean scores that were < 2, which can be interpreted as a strict rejection of the sentences as the Likert scale ranges from 1 – 6. The yellow slots highlight the mean scores that were > 3.5 and thereby can be interpreted as acceptance of

conditions. A total of 10 L2s rated the ungrammatical sentences with an average < 2, which accounts for 33% of them. Three L2s accepted the ungrammatical conditions.

Table 7

Individual differences in the native group

Ungrammatical sentences **Native group**						
Participant	**condition 1**	**condition 2**	**condition 3**	**condition 4**	**condition 5**	**Total mean**
1	1	1	3,6	1	1	1,52
2	1	1	5	1	1	1,8
3	1	1	5	1,2	1	1,84
4	1	1	4,2	1,2	1,4	1,76
5	2,6	2,6	4,2	3,4	5	3,56
6	1	1	2,6	1	1	1,32
7	2	2	4,6	2	2	2,52
8	1,4	1,8	1	2,2	2,4	1,76
9	2	1,8	2	2	2	1,96
10	1	1	2	1	1	1,2
11	1	1	1	1	1	1
12	4,8	3,8	5	4,8	4,8	4,64
13	1,4	1,4	2,6	1,2	1,2	1,56
14	3,2	2	3,6	3,6	3	3,08
15	2,4	1,2	2	1,4	1,4	1,68
16	1	2	1	1	1	1,2
17	1,6	2,2	1,8	2	2	1,92
18	3,2	3,6	3,2	2,6	3	3,12
19	4,6	5	5	5	5,2	4,96
20	4,8	5	5	5	5,2	5
21	3,6	4,2	3,6	4	4	3,88
22	5	4,2	4,8	4,8	4,8	4,72
23	2,6	2,6	2,8	2,6	2,6	2,64
24	4,8	4,6	5	5	4,8	4,84
25	1	1	1	1,4	1	1,08

Table 7 shows the group of natives' individual differences (raw scores) on ungrammatical conditions. Similarly to the previous table, green highlights mean scores < 2, and yellow highlights mean scores > 3.5. This table has more coloured slots than the previous one, meaning that more native participants strictly rejected or gave acceptance rates to the ungrammatical sentences. Consequently, there is more variety in this group than what we saw in the previous table. A total of 14 natives rated the ungrammatical conditions < 2, which

accounts for 56% of them. Moreover, as many as seven natives gave ratings that indicate acceptance of the ungrammatical sentences.

5.0 Discussion

In this chapter, I discuss the results reported in the previous chapter in light of my hypotheses. I will mainly focus on the results of the ungrammatical sentences, as the hypotheses addressed subject-verb agreement *errors*. The results will be discussed in relation to the theoretical background accounted for in chapter 2.

The hypotheses have been stated previously, but I will repeat them here in order to discuss them in connection to the results:

Main hypothesis:
The Norwegian L1 participants will be less sensitive to SVA errors than the English L1 participants.

Hypothesis 1.1:
If a sentence has linear distance between the subject and the verb, the Norwegian participants might accept subject-verb agreement errors.

Hypothesis 1.2:
Sentences with affix lowering will be more complicated for the Norwegian participants, making them accept SVA errors with lexical verbs to a greater extent than with auxiliaries.

Hypothesis 1.3:
If a sentence has both linear distance and structural distance, this might increase the probability of having the Norwegian participants accept subject-verb agreement errors even further.

Hypothesis 1.4:

If the subject of a sentence is coordinated, the Norwegian participants might accept a singular verb form, and thereby accept subject-verb agreement errors.

5.1 Group results

The main hypothesis of this study was that the Norwegians would accept more subject-verb agreement errors than the native speakers would, while the sub-hypothesis predicted that the structural differences between the conditions would affect the Norwegians' ability to detect SVA errors. As presented in the results chapter, the 2x5 Repeated Measures ANOVA analysis on ungrammatical test sentences showed a significant difference between the two groups and a significant difference between the conditions. By examining the profile plots, one can see that this significant difference was not caused by the Norwegians, as the hypotheses predicated. Counterintuitively, the profile plots showed that the natives had rated conditions 3 significantly differently compared to the Norwegian participants, and significantly differently compared to the other conditions. When looking at the natives' raw score mean for this condition in table 4 of the results, we see that the natives' mean score for this condition was 3.264. Unexpectedly, this score was quite close to being counted as an accepted condition (acceptance = > 3.5). Condition 3 was based on hypothesis 1.3 and was the condition where an adverbial interfered between the subject and the verb, entailing both linear and structural distance. This hypothesis was aimed for the Norwegian participants, but it appears that it was for the natives, not the Norwegian participants, that the interference of an adverbial between the subject and the verb led to higher acceptance. This could imply that structural complexity matters to natives and not to the Norwegians.

According to the profile plots of the ungrammatical sentences, the Norwegians and the natives have rated the conditions quite similarly, with the exception of condition 3. Consequently, the Norwegians rejected the ungrammatical sentences more consistently than the natives did, which indicates that the Norwegians are more sensitive to SVA errors than the natives, and not the other way around like the main hypothesis predicted. In the profile plots, we also see that the Norwegians rated the five conditions quite similarly. This means that the sentences with a linear distance were given similar ratings to the sentences with both linear distance and structural distance. Furthermore, it means that sentences with affix lowering did not diverge from sentences with auxiliaries in T-position, and that the coordinated subjects were treated similarly to the other types of subjects. Consequently, neither the main hypothesis or the sub-hypothesis were supported by the statistical analysis or through the interpretation of the profile plots.

In addition to the statistical analysis, descriptives from table 4 (results chapter) provided information which contributed to our understanding of the group results. Table 4

demonstrated the raw scores of the AJT with an overview of both groups' mean scores and standard deviation values for each condition. This overview of descriptives showed that the Norwegians rated the ungrammatical conditions from 2.30 to 2.47 which can be considered to be very similar mean scores. Therefore, neither the statistical analysis nor the descriptives of the raw scores bared evidence in favour of any of the sub-hypothesis. Moreover, when comparing the mean scores of the ungrammatical conditions between the groups, table 4 demonstrated that the conditions had been rated similarly, except for the fact that the natives rated the ungrammatical condition 3 higher than the Norwegian group did. Thus, the descriptives indicated that the main hypothesis was not supported as the Norwegian appeared more sensitive to SVA errors than the natives.

5.2 Individual results

As demonstrated in table 6 and table 7 in the previous chapter, there were some individual differences within the dataset. The Norwegian group had three participants who accepted the ungrammatical sentences with a mean score > 3.5, and 10 participants who rated the sentences < 2. As the Likert scale used in the AJT ranged from one to six, a score over 3.5 can be interpreted as acceptance, and scores between 1 and 2 can be interpreted as low scores and thereby a strict rejection. The remaining 17 Norwegian participants had mean scores between 2 and 3.5. When looking at the control group's individual results in table 7, we see an even larger variety amongst the participants. The natives had a total of seven participants who accepted the ungrammatical conditions, and 14 who rejected the sentences with a mean score < 2. In this group, only four participants rated the conditions between 2 and 3.5. When comparing the individual results of these two test groups, the most interesting difference was that the natives had more participants accepting the ungrammatical conditions than the Norwegians had. This came as a surprising result as it was anticipated that the natives would reject all ungrammatical conditions without exception. In general, we see that the natives had a tendency of either strictly rejecting the ungrammatical conditions or accepting them, while the Norwegians positioned themselves more towards the middle of the Likert scale as 17 Norwegian participants rated the conditions between 2 – 3.5.

With acceptability tests alone, one does not know exactly why the participants rated the sentences the way they did. There could be several reasons to why they accepted an ungrammatical condition. Firstly, the participants could have been aware of SVA errors and still have rated the sentences higher than 3.5 if the participants deemed the SVA errors as *minor* errors. Secondly, the participants might not have been sensitive to subject-verb

agreement errors and therefore have rated the sentences within the acceptance range as they believed the sentences were grammatically correct. When looking at the difference of acceptance frequency within the Norwegian group and the natives, one way of interpreting this could be that the natives did detect the SVA errors, but perhaps were biased to be more nice as they read in the information form that the AJT was created by a Norwegian student of L2 English. Another possible explanation could be that the natives who accepted the ungrammatical conditions saw SVA errors as a variety of English as some dialects and accents have irregular subject-verb agreement, such as African American Vernacular English. On the other hand, there might have been more individual participants accepting ungrammatical conditions within the native group than the Norwegian group due to the natives' tendency to make SVA errors in sentences with agreement attraction. It is important to note that this study did not control for agreement attraction within the test sentences. Furthermore, looking through the English participants' errors, it seems as though they accepted ungrammatical sentences both with and without agreement attraction. To sum up this far, the statistical analysis, its profile plots, and the descriptives table showed that there were no support towards the hypotheses of this study, meaning that the Norwegians did not seem less sensitive to SVA errors than the natives, and that the structural factors of the conditions did not affect the Norwegians' ratings. However, the individual differences show that there has been a higher degree of variety within the native group than the Norwegian group, even though their mean scores were similar.

5.3 General discussion

The overall results of this study suggest that the students of the five-year teacher program from NTNU are sensitive to subject-verb agreement errors. In addition to being both highly educated and proficient English L2 users, the Norwegian participants are also language teacher students, most of whom are in their last semester of their education. One might speculate whether this played a role on their Acceptability Judgement Test results. Given how they are trained to detect errors, one might wonder if their results were a reflection of them being particular sensitive to subject-verb agreement, or at detecting grammatical errors in general. On average, they judged the sentences like natives, and they were in fact somewhat better at judging errors on complex sentence structures such as condition 3. Thus, the results of this study differ from the research which was addressed in chapter 2. One can notice two clear differences between the previous studies and the present study: (1) the method, and (2)

expected proficiency of the target group. Starting with the former, unlike most of the mentioned studies on SVA, this study used an AJT to collect data. As described in the theory chapter, the Scandinavian studies by Johansson (2008), Garshol (2019) and Thagg Fisher (1985) all analysed *text material* produced by their participants and found relatively frequent SVA errors. Breiteneder (2005) studied English L2 texts produced by European participants of 21 different L1s, while Neff et al. (2007) analysed English L2 material produced by Spanish L1 speakers. Both Breiteneder (2005) and Neff et al. (2007) found results which indicated that the omission of inflectional morphology was the most frequent L2 mistake, by analysing their participants' written language. All the studies mentioned in this paragraph analysed *language production*. One might argue that the AJT will find fewer SVA errors than a text analysis would. This suggestion finds support in Chomsky's theory of language knowledge (1965), where he explained how language slips can occur during production without reflecting an individual's actual language competence. AJTs are generally assumed to test participants' underlying language competence as it decreases the likelihood of performance slips, which we typically see more of in language production. As demonstrated in the theory chapter, L2 learners might have internalized the syntactic representation needed for SVA, but still make mistakes due to slow processing and/or restraints on lexical access (Slabakova, 2016). One would expect that these L2 processing issues would manifest more during language production as the L2 learner will have to *apply* functional morphology, whilst during an untimed language comprehension task such as the AJT, the L2 learners did not have to produce grammar, but rather check if the exposed sentence matched their syntactic representations or not.

As for expected proficiency, most of the studies mentioned above were conducted on teenagers who attended either primary, lower secondary or upper secondary school. The participants of the present study were expected to be highly proficient in English, which might explain why this study derived results that differ from other SVA studies. To support this idea, the study of Jensen, Slabakova, Westergaard and Lundquist's (2019) will be used for comparison. In their study, they tested the Bottleneck Hypothesis by comparing their participants' results on English non-v2 word order to their results on English functional morphology. As a contrast to the studies mentioned in the paragraph above, Jensen et al. used an AJT to assess the participants' L2 knowledge. Their study found that the participants accepted more SVA errors than word order errors, which supported the Bottleneck's idea that functional morphology is the hardest aspect of second language acquisition. In contrast, using

the same method of data collection, the present study found that the participants did not struggle with functional morphology, as their mean scores generally implied rejection of all ungrammatical target-sentences and acceptance of all grammatical target-sentences. The most prominent difference between the study of Jensen et al. and the present study was the participants' age group and their expected proficiency. Jensen et al.'s participants ranged from 11 – 12 years old and 15 – 18 years old and attended primary school or upper secondary school, while the present study recruited participants who studied English at university level, whose average age was 25.7. As mentioned in the theory chapter, Slabakova explained that the tight bottleneck, in this context meaning *functional morphology*, can in fact widen and become more flexible after practise. By saying this, Slabakova meant that L2 learners' abilities to apply correct functional morphology can become more functional and precise with practise and time. The results of the present study support that claim, by finding that the Norwegian university students were able to separate between correct and incorrect English subject-verb agreement in a native-like manner. In this context it is important to clarify that the findings of this study do *not* suggest that functional morphology is not difficult for L2 learners, but rather suggest that highly proficient students of English L2 can have native-like grammatical SVA representations.

To elaborate more on what the results of this study suggest, it will be useful to discuss this study's results in light of what we know about L2 processing. As mentioned in the second chapter, Slabakova (2016) argues that when an SVA mistake occurs, we can assume that the problem stems from three sources: (1) not fully developed language representations, (2) problems regarding lexical access, (3) problems due to slow processing (Slabakova, 2016)". Consequently, the L2 learner must first have acquired the correct syntactic information. Furthermore, she must be able to map morphological endings onto her syntactic information. Lastly, her L2 processing skills must be efficient enough to allow her to apply correct morphological inflections during language production. Since the results of this study indicate that the Norwegian students of English do not have any problems detecting English subject-verb agreement, we can assume that at least point 1 and 2 are completely developed and efficient. They seem to have the syntactic representations needed for English SVA, and they appear able to access their functional lexicon and map this onto their syntactic representations. For point 3, it is important to keep in mind that the AJT was an untimed task, which means one cannot claim that the participants' processing was fully developed based on this AJT alone. One can, however, suggest that the participants' processing skills were

developed adequately to allow them to process English sentences at their own speed. One cannot rule out the possibility that the same participants could have made more mistakes it they were under time pressure, if they had to produce their own sentences, or if they were to partake in spontaneous conversation.

In sum, the results of this study indicate that the Norwegian students of English L2 do not have issues with English subject-verb agreement. None of the five sentences structures affected the Norwegian participants, and they rated the sentences similarly to the natives. Surprisingly, the natives rated condition 3 differently to the other conditions, and differently to the Norwegians. This could imply that structural complexity affects natives more than proficient L2 speakers of English. There were some individual differences, especially within the control group of natives, which might indicate that the natives used the AJT differently to the Norwegians. It has been suggested that it is less likely to find SVA errors in an AJT than text analysis, due to performance slips. However, Jensen et al. found SVA errors in their AJT, which suggests that the present study mainly found results different from other SVA studies due to the Norwegian participants' level of English proficiency. The results of the AJT indicate that the Norwegian participants are highly proficient in English SVA where they seem to have acquired the English syntactic representations needed for SVA, have adequate access to their functional lexicon, and that they are able to process L2 language effectively at their own rate. Regardless of all the literature and previous studies which show how subject-verb agreement is problematic for L2 learners, the results of this study imply that it is achievable for highly proficient L2 users, even with an L1 without overt subject-verb agreement, to acquire native-like intuitions about subject-verb agreement.

6.0 Conclusion

This study set out to examine whether the Norwegian participants were sensitive to subject-verb agreement (SVA) errors, and secondly, whether SVA errors in L2 production may stem from problems in establishing the required syntactic agreement relationships. To examine this, this study had 30 Norwegian students of English L2 and 25 native speakers of English respond to an Acceptability Judgement Test, where they were tested on SVA errors across five structurally different sentence types (conditions). The results of the Acceptability Judgement Test indicate that the Norwegians students were more sensitive to SVA errors across conditions than the natives were. The results thereby falsified the main hypothesis of this study. Secondly, the profile plots and the descriptives gave a more detailed overview, showing that the Norwegian participants gave similar ratings across conditions, which indicates that the Norwegian participants were not affected by the structural differences between conditions. The Norwegian participants rated sentences with linear distance between subject and verb similarly to the way they rated sentences with both linear and structural distance. Furthermore, they rated sentences with lexical verbs the same way as sentences with auxiliaries in T position, and sentences with coordinated subjects the same way as sentences with other forms of subjects.

Overall, this study did not discover any evidence that supported either hypothesis of this study, meaning that the Norwegian participants do not seem to have any problems detecting subject-verb agreement errors and that their L2 syntactic representations seem to be internalized and functional. Consequently, this study has derived results that differ from other studies on subject-verb agreement. As discussed in the previous chapter, this difference in results might stem from the fact that the present study had a different participant group with more proficient English L2 users, and also used a different method of data collection. As most of the previous studies analysed L2 production, one might argue that there would be a higher probability of finding SVA errors during *language production* than in an AJT which mainly measures *language intuition*. Even though the structural factors of this study did not affect the proficient Norwegian students, one cannot rule out the possibility that less proficient L2 learners might have been affected by the conditions, or that the same proficient Norwegian participants might have produced SVA errors in a production task.

As the theory chapter of this thesis has demonstrated, there has been a substantial amount of L2 literature and research studies which explain and analyse why L2 speakers struggle with SVA. Even though this study expected to find results somewhat in line with

previous studies, the Norwegian participants of this present study do not seem to struggle with English SVA. In fact, they were slightly better at judging complex sentence structures than the natives. The results of this study indicate that English L2 learners *can* develop the correct syntactic relationships needed for SVA, efficient and accurate lexical access, as well as L2 language processing skills which allows them to judge SVA errors in a native-like manner - at least in language comprehension.

6.1 Suggestions for future research

As this study found results which differ from previous studies, this implies that more research would be valuable. Since the participants of this study were university students, it would be interesting to investigate if younger L2 learners might have been affected by the structural difference between conditions. If a significant difference between conditions was to be discovered, this could aid future L2 acquisition by knowing which sentence structures are the most difficult to acquire.

Secondly, as this study only consisted of judgement tasks, one cannot know for sure why the participants rejected the ungrammatical sentences. It would be interesting for a future study to alter the AJT test so that the participants must describe their reasons for giving low ratings to sentences. In such a test one would be able to determine whether it were the subject-verb agreement errors they reacted to and not other factors that were not controlled for in this study.

Lastly, the AJT alone cannot rule out the possibility that Norwegian students of English might produce errors during language production, even though their syntactic representations seem to be in place. It would be valuable to test how the participants perform on an AJT *compared* to a written or oral production task, to investigate whether the university students of English might still have issues regarding lexical access or slow L2 processing.

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Appendix A: The present thesis' relevance for the teaching profession

After spending a substantial amount of time reading about English subject-verb agreement errors and interpreting research studies which analyse and explain this grammatical L2 phenomenon, I have acquired a better understanding of these errors and the possible causes that lead to mismatched agreement. As a future English teacher, I consider it very useful to have acquired a lot of in-depth knowledge about the most common L2 English mistake. Overall, I would say that the single most important thing this thesis has taught me is that enough time and effort will develop correct and functional acquisition of syntax and morphology, along with efficient lexical access and adequate L2 processing skills.

Furthermore, I feel more equipped as a language teacher now than I did prior to my master's thesis. Before writing my thesis, my strengths as an English teacher were, in my opinion, mainly my oral skills, my enthusiasm and motivation, and my overall people-skills. Earlier, my main insecurity about becoming an English teacher was whether I knew enough about English spelling and English vocabulary. After my teacher's practise, I noticed that a lot of the kids asked me about how to spell certain words, and there were times I did not know the answer, which was discouraging. After spending all of these months writing English on the daily, I feel more confident and more competent in regard to spelling, vocabulary and overall writing skills. In short, I believe this thesis has made me a better language teacher by having me explore the acquisition of syntax and morphology, as well as it has allowed me to further develop my own writing skills and English proficiency.

Lastly, I consider the results of my thesis to be important for ESL education. The previous studies that I have read concerning L2 subject-verb agreement, all show that this is an area of difficulty. As this study's results indicate that the proficient Norwegian participants did not have any problems in subject-verb agreement, the results provide a new perspective of subject-verb agreement acquisition. They show us that L2 learners at a certain level can judge ungrammatical subject-verb agreement in a native-like manner. As a future English teacher who has spent two semesters exploring the difficulties of subject-verb agreement, the results of this thesis put a positive spin on my future as a grammar teacher – my future students *can* become proficient in subject-verb agreement, as the results of my thesis indicate.

Appendix B, Consent form

Research project on English as a second language
I invite you to take part of my research project on English as a second language. Participation involves answering a few questions regarding your language background, and completing a grammatical judgement survey where you are asked to judge 80 English sentences. When exposed to a sentence, you will simply be asked to indicate whether you consider the sentence good or not.

Background and purpose
This project is part of a master's degree at the Norwegian University of Science and Technology (NTNU). My project will examine students of the five-year teacher education program, who have English as one of their subjects, on their ability to detect a grammatical phenomenon. The exact phenomenon I am examining will not be disclosed as it might interfere with the results. The purpose of this project is to see to which extent Norway's future teachers are able to detect grammatical errors of a certain type. This study will potentially provide valuable information regarding specific grammatical representations that are hard to grasp and internalize for second language learners.

What happens with your information?
If you take part of this project, you will be kept completely anonymous. This means it will be impossible to identify individuals within the collected material. Your data will be handled only by the student of this master's thesis and her supervisor. No information that might identify participants will be published in the master thesis, and all the collected data will be deleted mid-summer 2020.

Voluntary participation
It is voluntary to participate in the study, and you may at any time withdraw your consent by quitting the questionnaire before completion. After the survey has been submitted, you will no longer be able to withdraw your consent as it will not be possible to connect any data to a specific respondent.

Associate professor Anne Dahl (anne.j.dahl@ntnu.no) is responsible for the project. If you have any questions about the form or the project in general, please contact me by email: mia.sandanbraaten@gmail.com
Best regards,
Mia Sandanbråten, master student.

*

I have read and understood the information above and agree to participate

Appendix C, The original target sentences

Sentence type	Lexical verbs	Auxiliaries	
Long distance due to long NP	**Correct**	**Correct**	**Aspect**
Plural animate	Those people over there leaning up against the wall look suspicious	Two of the ex-presidents of the United States of America are criticizing the current president	Progressive
Sing. inanimate	That vase on top of the living-room table looks beautiful	The Late Night Show's episode from last Friday has been banned from airing again	Perfect
Plural inanimate	The pizzas cooking in the oven smell delicious	The students of Semantics and Pragmatics have taken the exam already	Perfect
Sing. animate	Harald the King of Norway, the fifth of his name, has two children	Jon Jones the Light Heavyweight Champion of the UFC was defeated tonight and thereby lost his belt.	Passive
Possessive sing	My classmate from the first-year science class told me that he likes you	My engagement ring in white gold with a beautifully cut oval diamond is missing	Progressive
	Incorrect	**Incorrect**	
Plural animate	Two girls in my daughter's kindergarten is making fun of her	A couple of guys from work who grew up in South Africa does not go skiing at all during the winter	progressive
Sing. animate	The Prime Minister of the United Kingdom, Boris Johnson, live on 10 Downing Street	Michael McIntyre's show called "Big World Tour 2019" were postponed until December	passive
Plural inanimate	The two lamps in the bedroom blinks constantly	The prices on warm winter coats has been reduced by 30 percent.	perfect
Sing. inanimate	The plant in the blue ceramic pot look dead already	"Aladdin", a popular 2019 musical fantasy movie, were produced by Walt Disney	passive
Possessive sing	My new friend who just moved here from Sweden believe in Santa Claus	My striped coat made from 100% wool which I bought last week are already missing.	progressive

Sentence type	Lexical verbs	Auxiliaries	
Linear and structural distance, AP	**Correct**		
He/she	He never wants to see you again		
Singular	The actor always elegantly and gracefully bows before leaving the stage		
Plural	The students almost always come to the final lecture		
Singular	The sun hardly ever shows during the winter		
Possessive	Your mother almost never drives anywhere		
	Incorrect		
He/She	She never come to visit us		
Singular	The student anxiously await her exam results		
Plural	Grandparents usually always gives you some pocket money when they visit		
Singular	After dinner, Carl often take a nap		
Possessive	My youngest brother hardly ever call me		

Sentence type	Lexical verbs	Auxiliaries	
Coordinated subjects	**Correct**	**Correct**	Aspect
Three elements Animate	Roman, Daniel and Hans play Call of Duty every night	Sarah, Susan and Kim are watching a Christmas movie	Progressive
Two elements Inanimate	The pen and the pencil are on the desk	Both the blanket and the pillow were bought to match my new coffee table	passive
Three elements Inanimate	Lemons, limes and oranges have vitamin C	In total, one cup, a wine glass and a beer bottle have been broken tonight	Perfect + passive
Two elements Animate	Both the doctor and the nurse wash their hands before performing surgery	The President and the Vice President were expected to come together	Passive
Two elements Possessive	My grandfather and my grandmother play cards every day	My brother and his girlfriend are playing guitar in the other room	Progressive
	Incorrect	**Incorrect**	**Aspect**
Three elements Animate	Carl, Carol and Clive has names that start with "C".	The president, his wife and his son-in-law was expected at three but did not show.	Passive
Two elements Animate	The boy and the girl goes to spinning class every Tuesday afternoon.	The king and the queen is arriving shortly	Progressive
Three elements Inanimate	The fairy lights, the ornaments and the Christmas tree is down in the basement	The bike, the skateboard and the snowboard is missing from the garage	Progressive
Two elements Inanimate	The TV and the radio plays different tunes	The bathroom and the living room has already been cleaned	Perfect
Two elements Possessive	My mother and my grandmother talks loudly	Othello and A Midsummer Night's Dream is written by Shakespeare.	Passive

Appendix D, Fillers sentences

Past tense
(1)I forgot my doctor's appointment last week
(2) That sad movie yesterday made me cry
(3) When the party was over, everyone went home.
Incorrect:
(1) Yesterday, I miss my class
(2) When you were young you run really fast
(3) When I came home, he has already gone.

Modal auxiliaries
1. People ought to come early if they want parking.
2. Visitors must take their shoes off before entering the house
3. I might be running a bit late
Incorrect
1. They must to wait for the green man
2. I think he will can go with us
3. Someone may has seen the missing cat

Adverbs
1. My neighbour drives fast
2. The light came gradually
3. My phone suddenly rang.
Incorrect
1 The roller coaster goes quick
2 She sings beautiful
3 The knight fought brave

Adjectives
1 Jack is taller than Jim
2. This cheesecake is really sweet.
3. There are many people on the beach
Incorrect
1 She is more stronger than her sister
2 These sneakers are the most new item I own
3 You have much cartoons

Word position
1 I like to listen to music
2 You should focus on your homework
3 You could wear your new, sparkly, black dress.
Incorrect
1 Play guitar I like
2 Throw stones should you not
3 I will wear my Christmas old sweater

Appendix E, The counterbalanced version of test sentences

Sentence type	Lexical verbs	Auxiliaries	
Linear distance due to long NP	**INCORRECT**	**INCORRECT**	**ASPECT**
Plural animate	Those people over there leaning up against the wall looks suspicious	Two of the ex-presidents of the United States of America is criticizing the current president	Progressive
Sing. inanimate	That vase on top of the living-room table look beautiful	The Late Night Show's episode from last Friday have been banned from airing again	Perfect
Plu. inanimate	The pizzas cooking in the oven smells delicious	The students of Semantics and Pragmatics has taken the exam already	Perfect
Sing. animate	Harald the King of Norway, the fifth of his name, have two children	Jon Jones the Light Heavyweight Champion of the UFC were defeated tonight and thereby lost his belt.	Passive
Possessive sing	My classmate from the first-year science class told me that he like you	My engagement ring in white gold with a beautifully cut oval diamond are missing	Progressive
	CORRECT	**CORRECT**	
Plural animate	Two girls in my daughter's kindergarden are making fun of her	A couple of guys from work who grew up in South Africa do not go skiing at all during the winter	progressive
Sing. animate	The Prime Minister of the United Kingdom, Boris Johnson, lives on 10 Downing Street	Michael McIntyre's show called "Big World Tour 2019" was postponed until December	passive
Plur. inanimate	The two lamps in the bedroom blink constantly	The prices on warm winter coats have been reduced by 30 percent.	Perfect
Sing inanimate	The plant in the blue ceramic pot looks dead already	"Aladdin", a popular 2019 musical fantasy movie, was produced by Walt Disney	passive
Possissive sing	My new friend who just moved here from Sweden believes in Santa Claus	My striped coat made from 100% wool which I bought last week is already missing.	progressive

Sentence type	Lexical verbs	Auxiliaries	
Linear and structural distance, AP	**INCORRECT**		
He/she	He never want to see you again		
Singular	The actor always elegantly and gracefully bow before leaving the stage		
Plural	The students almost always comes to the final lecture		
Singular	The sun hardly ever show during the winter		
Possessive	Your mother almost never drive anywhere		
	CORRECT		
He/She	She never comes to visit us		
Singular	The student anxiously awaits her exam results		
Plural	Grandparents usually always give you some pocket money when they visit		
Singular	After dinner, Carl often takes a nap		
Possessive	My youngest brother hardly ever calls me		

Sentence type	Lexical verbs	Auxiliaries	
Coordinated subjects	**INCORRECT**	**INCORRECT**	**ASPECT**
Three elements Animate	Roman, Daniel and Hans plays Call of Duty every night	Sarah, Susan and Kim is watching a Christmas movie	Progressive
Two elements Inanimate	The pen and the pencil is on the desk	Both the blanket and the pillow was bought to match my new coffee table	passive
Three elements Inanimate	Lemons, limes and oranges has vitamin C	In total, one cup, a wine glass and a beer bottle has been broken tonight	Perfect + passive
Two elements Animate	Both the doctor and the nurse washes their hands before performing surgery	The President and the Vice President was expected to come together	Passive
Two elements Possessive	My grandfather and my grandmother plays cards every day	My brother and his girlfriend is playing guitar in the other room	Progressive
	CORRECT	**CORRECT**	**ASPECT**
Three elements Animate	Carl, Carol and Clive have names that start with "C".	The president, his wife and his son-in-law were expected at three but did not show.	Passive
Two elements Animate	The boy and the girl go to spinning class every Tuesday afternoon.	The king and the queen are arriving shortly	Progressive
Three elements Inanimate	The fairy lights, the ornaments and the Christmas tree are down in the basement	The bike, the skateboard and the snowboard are missing from the garage	Progressive
Two elements Inanimate	The TV and the radio play different tunes	The bathroom and the living room have already been cleaned	Perfect
Two elements Animate	My mother and my grandmother talk loudly	Othello and A Midsummer Night's Dream are written by Shakespeare.	Passive

Appendix F, Backround information questions from the Base Form.

Before introducing the sentences, I would like you to answer a few questions regarding your language background.

Age:

Gender:

Study program:

- Five-year teacher education program with English as main subject
- Five-year teacher education program with English as second subject
- Other (please specify below)

If you marked "other" in the question above, please specify which study program.

If you did not mark "other" please jump to the next question.

Semester:

- 1 - 2
- 3 - 4
- 5 - 6
- 7 - 8
- 9 - 10

Mother tongue:

Do you speak any other language(s) with high proficiency? Please specify

Do you have a diagnosis that could potentially affect your language learning (e.g.dyslexia, severely impaired vision or hearing, autism etc.)?

No

yes

Have you ever lived in a country for more than 6 weeks where you relied on English as the primary means of communication?

No, I have not

Yes I have

How often do you speak English outside of the university?

Select the option which suits you best.

- Never
- 1 - 4 times per year
- At least once per month
- Every week
- Several times per week
- Every day

In which arenas do you engage with English in your everyday life?

You may mark several options.

- [ ] TV series/movies
- [ ] Social Media
- [ ] Gaming
- [ ] Reading literature (not pensum)
- [ ] Interacting with friends/partner/family
- [ ] At work

How would you rate your English competence?

I understand most of the English I hear and can communicate quite well. I would be able to write texts on familiar topics

I speak and write English fluently and can produce well-written texts on various topics.

I am very proficient in English. I speak fluently and spontaneously and can use English for social, academic, and professional purposes

Appendix G, Test instructions

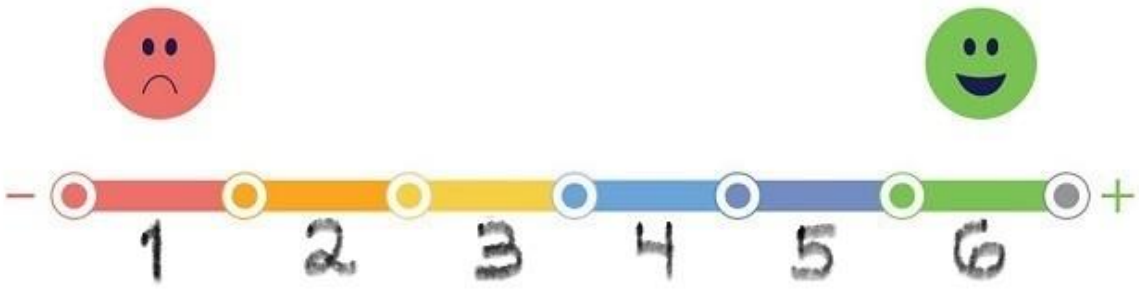
Research Project on English as a Second Language

Side 1

Thank you so much for participating!

You will be exposed to 80 English sentences and asked to judge whether the sentences are good or bad. When looking at the sentences, please do not pay attention to punctuation, as punctuation is not of importance to this study. Your focus will be on assessing whether the sentences are grammatically acceptable or not.

To give your assessment, simply mark a number from 1 to 6, where 6 would be the highest rating and a very good sentence, and 1 would be a very bad sentence. We encourage you to choose numbers in-between if you think that a sentence is neither completely ungrammatical or completely grammatical.



For reference, a sentence like:
"I usually go to the cinema on Fridays"
Is a completely grammatical sentence and would be rated 6

Whereas,
"I on Fridays the cinema usually go"
Is a completely ungrammatical sentence and would be rated 1

Appendix H, The AJT layout.

First page of Test A, for demonstration purposes.

Note: The space between the test sentences has been shortened to fit the limitations of a Microsoft Word page. There was more space between the target sentences in the AJT.

She sings beautiful *

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6

My neighbour drives fast *

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6

She never come to visit us *

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6

The bike, the skateboard and the snowboard is missing from the garage *

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6

You could wear your new, sparkly, black dress *

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6

The fairy lights, the ornaments and the Christmas tree is down in the basement *

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6

Harald the King of Norway, the fifth of his name, has two children *

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6

You have much cartoons *

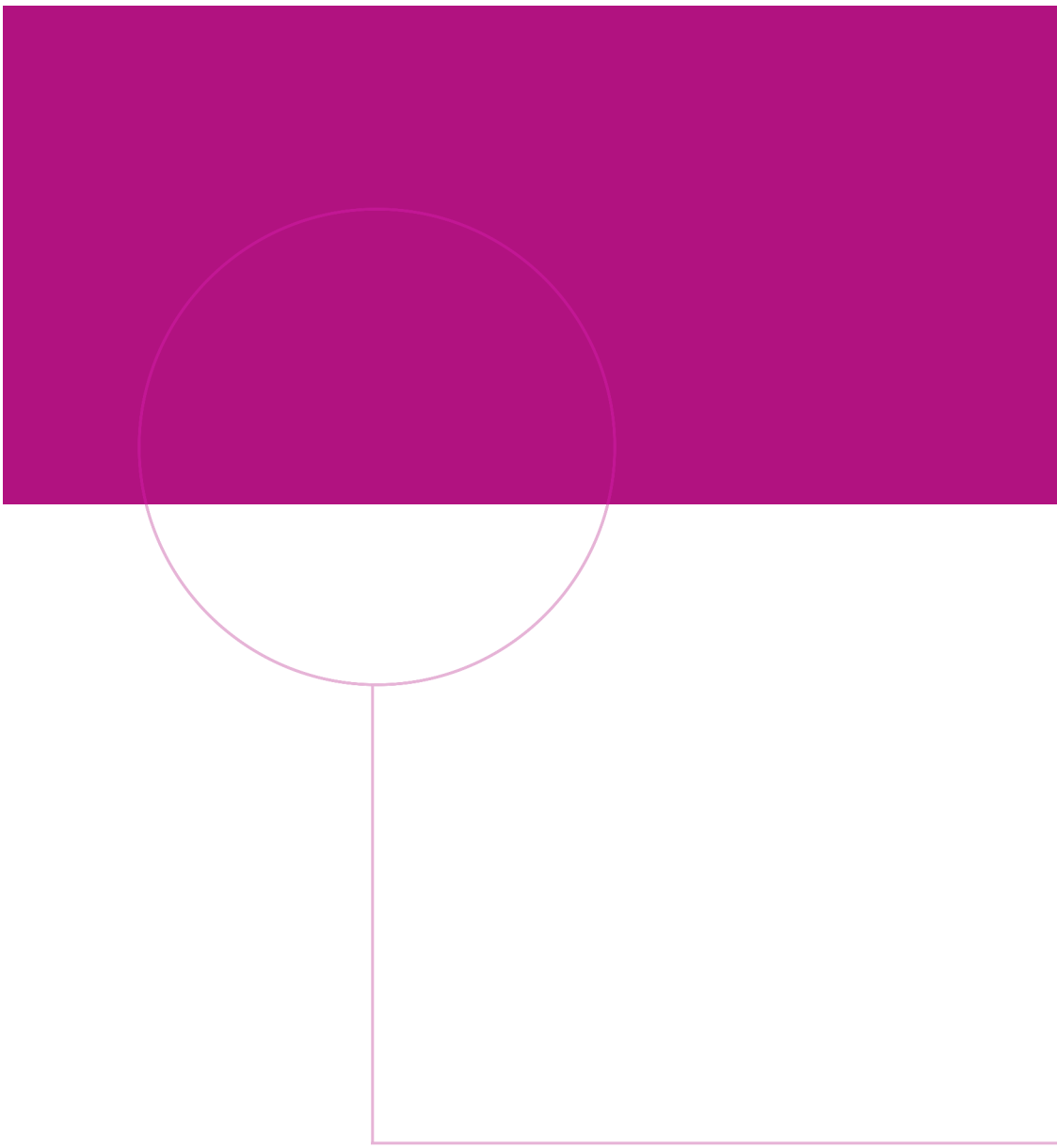
☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6

The actor always elegantly and gracefully bows before leaving the stage *

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6

The students almost always come to the final lecture *

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6



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