

Doctoral theses at NTNU, 2021:139

Tina Louise Strømholt Ringstad

Acquiring variation

A study of children's and adults' embedded clause word orders in Norwegian – distribution, development and effects

NTNU
Norwegian University of Science and Technology
Thesis for the Degree of
Philosophiae Doctor
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Department of Language and Literature



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ISBN 978-82-326-5863-3 (printed ver.)

ISBN 978-82-326-6992-9 (electronic ver.)

ISSN 1503-8181 (printed ver.)

ISSN 2703-8084 (online ver.)

Doctoral theses at NTNU, 2021:139

Printed by NTNU Grafisk senter

Abstract

This dissertation explores variable word order generalizations in Norwegian embedded clauses, both in adult and child language. Norwegian allows a restricted set of word orders in embedded clauses, as can be seen in the presence of negation. The canonical word order is subject-negation-verb (S-Neg-V). However, in certain contexts, the verb may precede negation (V-Neg). In addition, the subject can in some cases follow negation (Neg-S). This dissertation has two aims. The first is to provide new insights into what restricts and licenses these word orders in adult Norwegian grammar. This is a crucial prerequisite for the second aim: Investigating how children acquire this variability.

The dissertation comprises three journal articles addressing the issue of word order variation from different perspectives. The first article presents a corpus-study of adults' use of V-Neg order contra the canonical Neg-V order. The article offers an empirical contribution to the large debate on the licensing of embedded V-Neg in Mainland Scandinavian languages. The article extends the current empirical knowledge base by surveying the distribution of V-Neg across different clause types in five large adult-speech corpora. Based on its distribution, the article suggests that V-Neg seems to be used to convey discourse-new information: V-Neg is not limited to clauses selected by an embedding predicate, and it is rarely used in clause types expressing familiar information.

The second article concerns children's acquisition of the V-Neg/Neg-V alternation, and uses elicited production tasks to investigate whether and when children know which clause types disallow the V-Neg order. It is shown that children overuse V-Neg relative to adult speech, but in different proportions across three clause types investigated. Children first stop using the restricted word order in syntactically illicit environments (relative clauses), while their overuse of V-Neg in complement clauses where it is illicit on pragmatic grounds continues after age 7. The observed pattern in children's production is suggested to be a result of syntactic distinctions being easier to draw than semantic-pragmatic distinctions, as well as possible problems ascribing certain semantic-pragmatic features to embedding verbs.

The third article reports a corpus study of adults' placement of subjects in embedded clauses (preceding or following negation, S-Neg/Neg-S), and results of production tasks eliciting children's and adults' subject placement. It is shown that adults strongly prefer S-Neg in spontaneous speech, whereas children use Neg-S more than adults. Children's preference for Neg-S decreases with age, reaching target-like production around age 5. The pattern in children's production is argued to reflect a preference for 'economical' analyses that use shorter syntactic movement operations, as attested in earlier acquisition studies.

Whereas the three papers investigate the selected phenomena in isolation, the cover article considers the developmental trajectory of the generalizations simultaneously within a developing syntactic structure. The attested patterns are argued to arise as children's grammar develops from one with a single position for subjects, verbs, and negation, to the target grammar that has two distinct positions for negation, for subjects, and verbs.

Acknowledgements

After thousands of hours of work, uncountable pages written, rewritten, deleted and written again, several hundred appointments made with kindergartens, hours and hours of audio files logged, so many research articles read, countless litres of coffee, a little laughter, some tears (and a maternity leave), my PhD dissertation is done! Even though doing a PhD can feel very lonely at times (especially during a pandemic lockdown), it doesn't actually happen in solitude. There are a number of people who have been involved in my work in various ways, that I would like to express my gratitude towards.

No child language data would have been present in this work without the kindergarten employees who willingly facilitated my work, the parents who approved of their children's participation in my project, and of course, the children themselves. I am so thankful for their patience, willingness and creativity. I had some good times talking to them. I am also grateful to colleagues who have undertaken so much important work in the past, allowing me to build on solid research and use large databases for my own work.

Through my work on this dissertation, I have had the privilege of being supervised by three hard-working people with an apparently infinite knowledge and understanding of linguistics, who have generously shared their time and their knowledge with me. Each in their own way has shaped me as a researcher, and I feel lucky to have had the opportunity to learn from and be inspired by this trio of supervisors: Kristin Melum Eide, Marit Westergaard and Dave Kush. I could not have done this without any of you. Kristin has had my back through academic and non-academic emergencies since I wrote my master's thesis. Thank you for your patience, excellent metaphors, knitted baby blankets and endless support. Marit's research was what got me interested in acquisition to begin with. Thank you for all the wisdom you have offered and for challenging my views and assumptions. I have no doubt benefited greatly from our many discussions! Dave's later entrance to the supervisor team has been thoroughly made up for by his meticulous and considerable effort in helping me develop my work. Your patience has been admirable, and I'm glad you found it genuinely funny when I discovered problems and possibilities in my analyses that you had tried to point out for months. Thank you for making me stretch just a little further than I thought I would, and for being a go to source for small and large questions at various times of the day.

I feel lucky to have been part of a department, and the AcqVA research group, with so many eager and talented colleagues. Thank you for the discussions, seminars, conferences and inspiration. I would particularly like to thank Ivar Berg, who was (un)fortunate enough to have his office right next to mine for the duration of my PhD. Thank you for helping, pushing, and listening, and for teaching me how to use LaTeX (and thereafter spending endless hours helping me and helping me again). I would also like to thank Terje Lohndal, for his help with all kinds of matters throughout my time as a PhD student. Thank you also to colleagues at the University of Tromsø, who made me feel so welcome whenever I visited.

I am grateful to Tanja Kupisch for reading and commenting on a draft of the entire dissertation. Your feedback not only benefited the present work, but will also benefit my future work. I am also grateful to Tor Áfarli for reading and commenting on one of the latest versions of the cover article. A big thank you is also in order to Bridget Samuels, for doing an excellent job proofreading the cover article.

Three students did a great job in assisting me with the data collection for the child language studies. Thank you, Kari Brøske Holmli, Marie Barstad and Emma Rødli.

I am grateful to have been surrounded by other PhD students throughout this work. A particular thank you to Anne Mette Sunde, Ragnhild Eik, and Brita Ramsevik Riksem, for help, inspiration and making going to work so much fun. Thank you, Kristin Brodahl for the freshly brewed coffee every morning and keeping my spirits up throughout the covid-times. Eirik Hvidsten, sharing an office with you for the last few months kept me sane, thank you! Aleksander Hammer, you were here for the beginning of this. I only wish you'd have been here for the end too. Your smile and your dry sense of humour have stayed with me.

Heming Strømholt Bremnes, you must be the most patient husband in the world, and I don't know how I would have finished this thesis without you putting food on the table, cleaning the house, taking care of our little human and the dog as well as giving me moral and academic support. Olav, you have been a constant reminder of why studying language acquisition is the most interesting thing in the world, but you have also given me very welcome reminders that going to the swings, throwing a ball and watching cars and buses are things equally important to, or more important than, dissertation writing. Thanks for the walks and the barks, Tussa.

I would also like to thank my friends and family for patiently waiting and encouraging me while I was finishing this work. I could not have done this without your cheers and comforts. Not being able to see you for so long has been really hard, and I so look forward to coffee, tacos and spending time with you again. It's finally done!

Trondheim, December 2020
Tina Louise Strømholt Ringstad

List of papers

1. Ringstad, Tina L. (2019). Distribution and function of embedded V–Neg in Norwegian: A corpus study. *Nordic Journal of linguistics*, 42(3), 329-363.
2. Ringstad, Tina L. and Dave Kush. (to appear). Learning Embedded Verb Placement in Norwegian: Evidence for early overgeneralization. Accepted, in revision for *Language Acquisition*.
3. Ringstad, Tina L. and Marit Westergaard. (submitted). Children’s acquisition of word order variation: A study of subject placement in embedded clauses in Norwegian. Manuscript submitted for publication.

Note on article 2

Paper 2, ‘Learning Embedded Verb Placement in Norwegian: Evidence for early overgeneralization’, is joint work with Dave Kush. This article reports on a child production experiment mapping embedded clause verb placement. I initiated and conceived of the study and its overall design, made the materials, collected the data (with the help of two assistants, Marie Barstad and Kari Holmli), and coded responses. Kush was involved in refining the experimental design and was in charge of statistical analyses. Both authors were actively involved in writing the text.

Note on article 3

Paper 3, ‘Children’s acquisition of word order variation: A study of subject placement in embedded clauses in Norwegian’, is joint work with Marit Westergaard. This article contains a corpus study of subject placement in embedded clauses in adults’ language, and an experimental study of the same structure in children’s production. I initiated and conceived of the study and its overall design, made the materials, collected the corpus data and experimental data (the latter with the help of an assistant, Emma Rødli), as well as carried out statistical analyses. Westergaard was involved in issues of how to correctly code the data, as well as theoretical analyses of the data (Discussion section). Both authors were actively involved in writing the text, but the main part of the writing was carried out by me.

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Chapter 1

Introduction

1.1 Topic and purpose

This dissertation investigates the production of variable word order by children and adults as a means of understanding variation in adult speakers' language and how children acquire generalizations from variable input. As a case study, embedded clauses containing negation in the Mainland Scandinavian language Norwegian are used. The specific type of variation under study is illustrated in (1).¹

- (1) a. Voksne folk sa [at de **ikke** hadde lyst å arbeide]
adult people said that they not had desire to work
'Adults said that they did not want to work.'
- b. Voksne folk sa [at de hadde **ikke** lyst å arbeide]
adult people said that they had not desire to work
'Adults said that they did not want to work.'
- c. Voksne folk sa [at **ikke** de hadde lyst å arbeide]
adult people said that not they had desire to work
'Adults said that they did not want to work.'

The present work concerns three possible word orders in embedded clauses containing negation in Norwegian. One of the word orders is the default, and two are contingent on different factors. The most commonly used word order is the one where negation precedes the verb (Faarlund et al., 1997), as shown in (1a).² Here, the negation is preceded by the subject and followed by the verb, an order which we may call Negation-Verb,

¹The type of subject, i.e. whether the subject is a pronoun or a DP, plays a role in this word order variation, an issue we return to in detail. However, in these examples, it is not important that the subject is a pronoun. The point is to illustrate the variation under scrutiny.

²The examples in (1) are versions of an utterance from the ScanDiaSyn corpus. The original utterance had the S-V-Neg word order, and I have altered it here to give a lexically identical illustration of the word order variation.

henceforth Neg-V. Neg-V is the default, or canonical, embedded clause word order. Under certain conditions (to be outlined in section 2.2.1), the verb may precede the negation, as shown in (1b), Verb-Negation, henceforth V-Neg. Another alternative to the canonical word order is having the subject following negation, Negation-Subject, henceforth Neg-S, (1c). The restrictions on this word order are explained in section 2.2.2.³ In addition to being used in different contexts, each word order alternative is used in adult speech to a varying extent: Whereas the Neg-V order is the most prevalent in embedded clauses, V-Neg is less commonly used, and Neg-S is used least frequently.

Acquiring basic, simple and frequent parts of a language is likely to happen early on in a child's life and with relative ease. For example, children's word order in two-word utterances typically reflects the target language's word order, illustrated by the verb-object utterance by an English-speaking child in (2) (example from Brown, 1973, 205).

(2) Hit ball [Adam, stage I]

Acquiring different generalizations for similar environments, such as those outlined above, likely poses a completely different challenge for the child. Norwegian children must learn the default word order for embedded clauses (and the underlying syntactic analysis). This analysis is distinct from the main clause analysis (see chapter 2). Moreover, children must learn that there are exceptions to the default word order in embedded clauses and learn the appropriate analyses for each of these generalizations. They must further discover what features are relevant for invoking the exceptional word orders. As I will show below, in the absence of negation (or sentential adverbs), there are surface ambiguities with respect to verb and subject placement. Therefore, learning the appropriate generalizations can only be made on the basis of a small subset of input data. Children likely learn the relevant analyses only from embedded clauses with negation, which provide cues to the underlying relative positions of verbs, negation, and subjects. Moreover, the challenge is complicated by the very existence of variation in word order: Children who are exposed to variation receive potentially conflicting cues to the appropriate syntactic analyses.

One could imagine various ways children might deal with these challenges in order to settle on the correct analysis, based on the wide array of possible analyses consistent with the input. They might have an intrinsic bias towards one of the word orders, based on frequency or considerations of economy in syntax (the word order involving the least syntactic operations, see Chapter 3). They might use all three word orders from early on, without realizing, or being sensitive to, the appropriate features guiding the use of each of them, or they might be target-like from the beginning. The variety of strate-

³A terminological clarification: I will use Neg-V and V-Neg to refer to the placement of the verb relative to negation. In Paper 3 as well as sections in the cover article addressing subject placement in isolation, I will use S-Neg and Neg-S to refer to the placement of the subject relative to negation. However, unless otherwise specified, Neg-V is the same as S-Neg(-V), and when discussing the three alternatives together, I use the terms V-Neg, Neg-S and Neg-V, with the last of these also meaning S-Neg.

gies children might employ relates to issues of how children disentangle the different word orders, whether they are able to assign them separate analyses, and when and how they learn the licensing conditions on each word order. As a way of addressing these issues, this dissertation considers the overarching research question *How do children learn (conditioned) generalizations from variable input?* Working with this topic also contributes to a plea for more research to ‘establish all the potential outcomes of the acquisition process when word order (and other) variation is involved’ (Anderssen et al., 2010).

A prerequisite for studying acquisition is adequate knowledge of the target grammar being acquired. This prerequisite is addressed here by asking what licenses and restricts the word order variation in embedded clauses in Norwegian adult language (research question 1 below). The embedded Neg-S order is little studied (existing studies include e.g. Westergaard (2011) and investigations in the Nordic Atlas of Language Structures (Garbacz, 2014)), so increasing knowledge of its use in adult language is crucial as a ground for comparison with children’s production. The V-Neg order, on the other hand, is the topic of an extensive amount of literature (especially when considering embedded V-Neg as embedded V2)(e.g. Bentzen et al., 2007; Wiklund et al., 2009; Heycock, 2006; Julien, 2010). It is nevertheless necessary to study further, since there is disagreement of where and why it is licensed. I make the assumption that acquiring a more comprehensive empirical overview of where it is used might inform this debate.

Since children’s productions provide a window into the acquisition process, children’s production of the embedded clause word orders is investigated, following research question 2. The larger aim is finding answers to how children acquire generalizations about this particular word order variation (question 3). In turn, this will allow for an exploration of the general implications following from children’s acquisition of this word order variation, the hypothesis being that this case study can inform us about children’s language development (question 4).

1. *What licenses and restricts the word order variation in embedded clauses in Norwegian adult language?*
2. *Which patterns can we observe in children’s production of embedded clauses with negation and at which stage in their development?*
3. *How can these patterns be analyzed?*
4. *How can children’s acquisition of embedded clause word order generalizations inform us about children’s language development?*

This dissertation investigates Norwegian embedded clauses with negation through three papers (to be presented in the next section) comprising four studies. Two of the studies concern adult language and the other two concern child language. Each study considers either the word order pair V-Neg/Neg-V or S-Neg/Neg-S.

As for the variation in adult language, the present findings indicate that V-Neg and Neg-S are not lexically restricted, and I suggest that the function of both these word orders is

to convey discourse-new information. One line of proposals for the V-Neg order holds that it is restricted to certain clauses where it is licensed by the lexical semantics of the embedding predicate (following Hooper and Thompson, 1973). Corpus data in Paper 1 show that V-Neg is rather restricted to a certain type of clauses, namely those with an ability to express discourse-new information; this word order is not used in clause types of a familiar nature. For subject placement, whether the subject precedes or follows negation is often claimed to be distinguished by information structure, the former being reserved for discourse-given subjects and latter for subjects expressing new information (e.g. Westergaard and Vangsnes, 2005). This distinction is typically discussed in relation to pronominal vs. full DP subjects. Corpus data in Paper 3 confirm this general pattern with pronominal subjects, but this study looks further into possible lexical properties that might correlate with DP subjects' distribution, such as specificity and length. The Neg-S word order is not found to be restricted to any particular type of subject, supporting the view that it is used to express discourse-new information.

As for the variation in child language, findings from the present studies show that young children (around age 3) use all three possible word orders in embedded clauses, thus giving a collective confirmation of patterns found for V-Neg and Neg-S in e.g. Westergaard and Bentzen (2007); Waldmann (2008, 2014), and Westergaard (2011) respectively. Children use the three alternatives in a way resembling adult language, indicating that they have a basic mastery of relevant generalizations early on. This implies that children are able to perceive both very infrequent and highly complex features of their target grammar from a very young age. An important part of the present findings is that children overuse both the exceptional word orders compared to adults, thus also 'underusing' the default word order. This implies that children are not simply frequency-matching their input. In the discussion in this cover article (Chapter 6), children's production is suggested to be a cause of their preference for using low syntactic positions, in the spirit of economy analyses in e.g. Westergaard (2009).

1.2 Contents of the dissertation

This dissertation comprises three full-length journal articles. I will briefly outline the content of these articles here, but see Chapter 5 for a more in-depth exploration. The present work is situated within a generative framework, but equally important to a theoretical understanding of child language acquisition is the empirical contribution of children's and adults' production of specific points of variation.

The first paper (Ringstad, 2019), which I will call *THE V-NEG CORPUS STUDY*, aims to provide a broad empirical foundation for study of the distribution of the V-Neg word order (1b) as a way of addressing disagreement and uncertainty concerning adult generalizations about this word order. Even though the proper characteristics of the environments allowing the embedded V-Neg (often called embedded V2) word order have been much discussed in the literature, there is no agreement on its licensing conditions. In this paper I argue that this is likely caused by the empirical base of these discussions having

been too narrow: The primary sources of data are typically introspection and intuition, and where corpus data are utilized only selected environments are included. This paper attempts to remedy the lack of an adequate empirical foundation by gathering and categorizing all available corpus data on adult speech in present-day Norwegian as a way of discovering empirical facts about the distribution of the non-canonical word order embedded V-Neg.

The second paper (Ringstad and Kush, to appear), which I will call THE V-NEG CHILD STUDY, investigates children's production of the embedded V-Neg word order (1b). This study utilizes elicited production tasks to investigate whether children produce V-Neg only in environments where adults do so, or elsewhere as well, as a test of whether, when and how they learn the correct generalizations.

The third and last paper, (Ringstad and Westergaard, submitted), which I will call THE NEG-S STUDY, explores subject placement relative to negation, i.e. Neg-S (1c), relative to the common word order S-Neg (1a). The main focus of the paper is children's production of these two alternatives. However, because embedded Neg-S word order has received limited attention in the literature, the paper includes a corpus study to establish more clearly the distribution of Neg-S in the adult language. With a better understanding of when and where Neg-S occurs in adult speech, the paper investigates children's acquisition of Neg-S order. Since Neg-S is the least frequent of the three possible word orders in embedded clauses, children very rarely encounter this alternative. Thus, in the paper we examine which generalizations children are able to make based on very scarce data.

The dissertation consists of this cover article, followed by Papers 1, 2 and 3. The cover article comprises the following parts: Following this introduction is Chapter 2, where I outline the word order of Norwegian. Here, I sketch out the variation introduced above, but I also show how the word order in embedded clauses relates to that of main clauses. The chapter should provide an understanding of why further research into this variation is needed, as well as define the children's learning task. Chapter 3 addresses previous studies on children's acquisition of variation and connects these studies to a general theoretical background of first-language acquisition. The methods used in Papers 1-3 are outlined and discussed in Chapter 4. Chapter 5 goes more into detail on each of the papers and presents their key findings. Finally, Chapter 6 discusses what the findings from Papers 1, 2 and 3 tell us about embedded clause word order variation in adult language, and what they tell us about how children acquire variation. Chapter 7 concludes the dissertation and points towards the road ahead.

Chapter 2

Norwegian word order

As introduced in the previous chapter, this dissertation will focus on word order found in embedded clauses in Norwegian. The specific variation under scrutiny is shown in (1). In embedded clauses, negation (*ikkje*) can appear in 3 different positions with respect to the subject and verb: *i*) immediately before the finite verb, after the subject (S-Neg-V, (1a)), *ii*) after the finite verb (V-Neg, (1b)), or *iii*) immediately before the subject (Neg-S, (1c)).¹

- (1) a. Olav sa [at musikklæraren **ikkje** spelte xylofon i går]
Olav said that musicteacher.DEF not played xylophone yesterday
'Olav said that the music teacher didn't play the xylophone yesterday'
- b. Olav sa [at musikklæraren spelte **ikkje** xylofon i går]
Olav said that musicteacher.DEF played not xylophone yesterday
'Olav said that the music teacher didn't play the xylophone yesterday'
- c. Olav sa [at **ikkje** musikklæraren spelte xylofon i går]
Olav said that not musicteacher.DEF played xylophone yesterday
'Olav said that the music teacher didn't play the xylophone yesterday'

This chapter will concentrate on the general pattern of such variation in adult language. by doing the following: *i*) looking at how the embedded clause word order compares to that of main clauses, *ii*) showing how the different word orders can be analyzed syntactically, and *iii*) giving an outline of our current knowledge of the distribution of the embedded clause variation. These aspects of the word order variation will serve as a

¹A fourth possibility is having a topicalized embedded clause, as shown in (i). Such clauses are not considered in the present study.

- (i) Olav sa [at i går spelte **ikkje** musikklæraren xylofon]
Olav said that yesterday played not musicteacher.DEF xylophone
'Olav said that the music teacher didn't play the xylophone yesterday'

point of reference for the discussion in Chapter 6, and are important for understanding what the child must master to acquire the target language fully. Note that while the papers in this dissertation do not provide explicit syntactic analyses of the word orders discussed, they do address the distribution and possible licensing conditions of the different alternatives.

The chapter starts by giving an overview of two basic word orders in main clauses of Norwegian and considering their syntactic analyses. The chapter continues by presenting variable word orders in main and embedded clauses, with the position of negation serving as a locus of the presentation. There is a possibility of dialectal variation with respect to the word order variation discussed here, and therefore this chapter concludes with a brief overview of the dialect situation in Norway.²

2.1 Norwegian word orders and their analyses

Analyses of the word order variation in (1) explain the different observations about verb movement, the position of negation, and possible subject movement. There is extensive debate about how best to analyze the variation and which assumptions to adopt. In the following I present some basic background on Norwegian clause structure and then a distilled analysis. I will start by outlining some basic word orders in main clauses of Norwegian. I then turn to discuss the position of negation, and by doing so I touch upon how verb placement differs in main and embedded clauses. Finally, I outline a way to explain the various word order possibilities once an analysis of verb movement and negation has been selected. Note that in the present work, I only consider word order variation relative to negation, and not other sentential adverbs. Negation and other sentential adverbs are often discussed as the same ‘phenomenon’ with regards to their distribution (and syntactic analysis) in Scandinavian (Østbø Munch, 2013, 9), but negation and different adverbs actually have somewhat different syntactic distributions (see examples in e.g. Bentzen, 2009). Therefore, giving the same analysis of negation and adverb placement is not necessarily appropriate.

2.1.1 Basic main clause word orders

Norwegian is a verb-second (V2) language (e.g. Holmberg, 2015) with the basic word order SVO, as shown with the subject-initial declarative clause in (2).

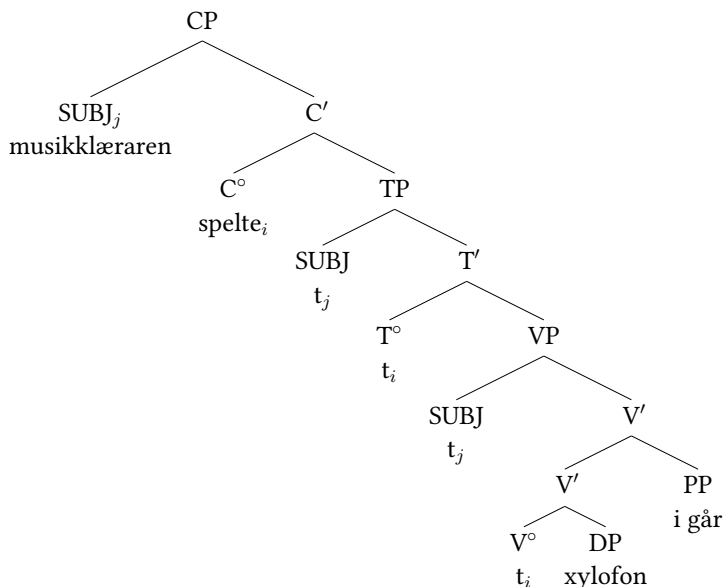
- (2) Musikklæraren *spelte* xylofon i går
 musicteacher.DEF played xylophone yesterday

²The possibility of dialectal variation also relates to the reason why only Norwegian is studied in this dissertation even though the (Mainland) Scandinavian languages all display the word order alternations discussed here: Although the languages are so similar they are viewed as being on a dialect continuum rather than as distinct languages, they also differ in many respects, and it is not clear whether the distribution of this word order variation is similar across the languages. Therefore, studying each language on its own gives the clearest generalizations, enabling later cross-linguistic comparisons.

‘The music teacher played the xylophone yesterday’

Being a V2 language, Norwegian has verb movement of finite verbs to the clausal head, i.e. V-to-T-to-C movement, henceforth V-to-C movement (Vikner, 1995). In its simplest form, an analysis of a Norwegian main clause such as the one in (2) only needs to consist of the three layers CP-TP-VP, as shown in (3).

(3)

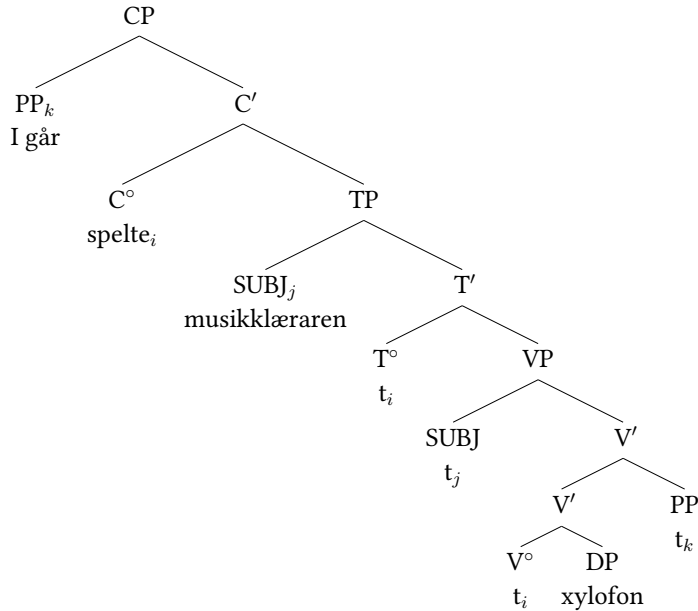


While an SVO clause in fact is ambiguous with respect to the position of the verb, the V2 nature of Norwegian becomes visible in non-subject initial clauses. In a non-subject initial sentence like (4a), the verb comes after the fronted phrase (*i går*) and before the subject. If the verb is not in second position (as in (4b)), the sentence is ungrammatical. The common view is that subjects must move out of VP (see e.g. Bobaljik and Jonas, 1996). In a non-subject initial clause the subject must have moved at least to the closest available position, which is here SpecTP. In order to end up between the fronted adverbial and the subject in SpecTP as shown in (4a), the verb must have moved higher than TP. As illustrated in (5), this must be V-to-C movement. In the following I will also take a view of verb movement past negation as V-to-C movement. A relevant clarification for embedded clauses is that they differ from main clauses in that the verb in general does not undergo movement to C, as opposed to the main clause V-to-C movement.

- (4) a. I går *spilte musikklæraren* xylofon
 Yesterday played musicteacher.DEF xylophone
 ‘Yesterday the music teacher played the xylophone’

- b. *I går musikklæraren *spelte* xylofon
 Yesterday musicteacher.DEF played xylophone
 ‘Yesterday the music teacher played the xylophone’

(5)



2.1.2 Word order variation and placement of negation

Clauses containing negation are somewhat less straightforwardly analyzed. A complicating factor is that in the literature on Norwegian, the exact position (or positions) of negation is often not explicitly addressed. In the following I will make the assumption that there are two possible positions for negation in Norwegian, following proposals in Eide (2002), Holmberg (1993) and Lindstad (2007). The two positions are *i*) a high position (above TP), and *ii*) a low position (above VP).

In line with the traditional view of Scandinavian sentential negation (cf. Holmberg and Platzack, 1995), I will assume for this presentation that negation is an adjunct.³ What is important here is not the nature of negation per se, but rather its location in the clausal

³While there are scattered proposals in the literature (Lindstad, 2007; Østbø Munch, 2013) advocating that Scandinavian negation could be treated as a head, projecting its own NegP as is the common analysis for English and French (e.g. Pollock, 1989), these proposals run counter to the observation that contrary to English and French, the Scandinavian negation can be topicalized, as shown in example (i), adopted from Holmberg and Platzack (1995, 17).

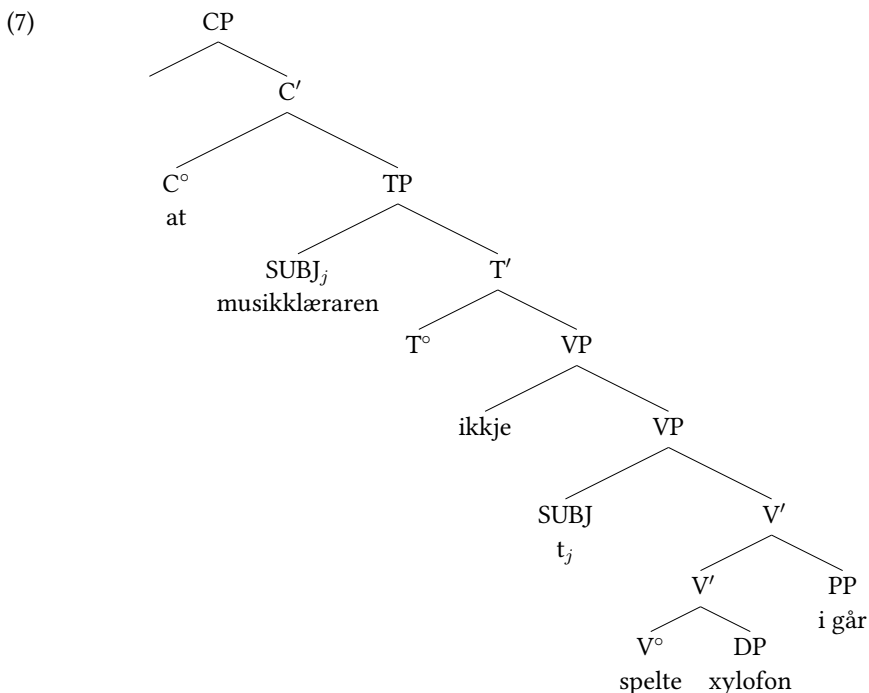
- (i) Ikke vet jeg hvor hun bor
 not know I where she lives
 ‘I don’t know where she lives’

hierarchy relative to other heads.

Low negation

As described above, the subject is assumed to be in SpecTP. It follows from this that in clauses with the word order S-Neg, negation must be lower than the subject. The standard analysis of negation in Scandinavian is that negation is placed directly above VP (see e.g. Holmberg and Platzack, 1995). In embedded clauses with negation, this results in the canonical word order Neg-V, where the verb follows negation, shown in (6). An analysis of this embedded clause with negation adjoined to VP is given in (7).

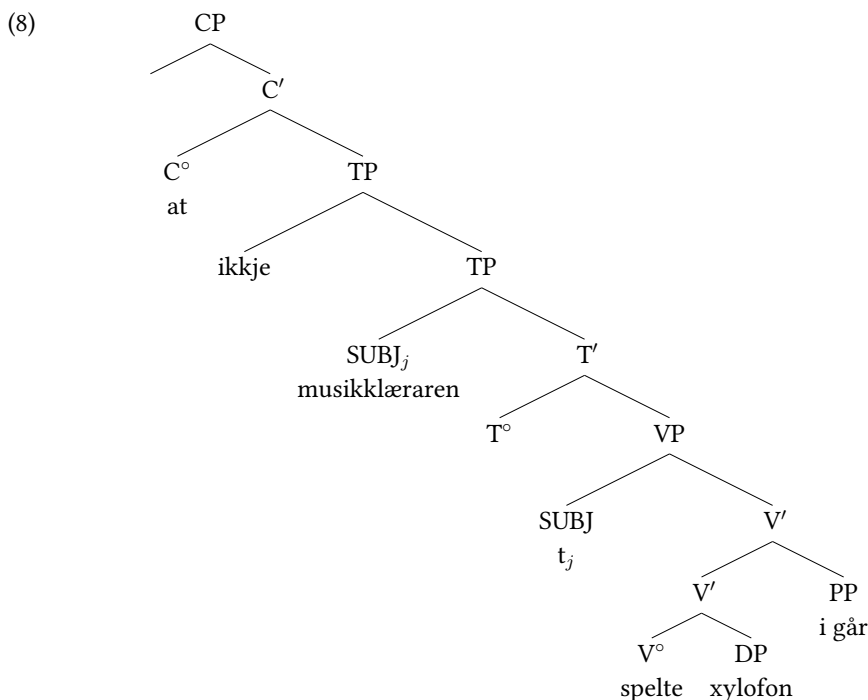
- (6) Olav sa [at musikklæraren **ikkje** spelte xylofon i går]
 Olav said that musicteacher.DEF not played xylophone yesterday
 ‘Olav said that the music teacher didn’t play the xylophone yesterday’



High negation

A low adjunction site (above VP) for negation is problematic when it comes to explaining word order in clauses where negation precedes the subject (Neg-S, as shown in example (1c)). If the only place for negation is adjoined to VP, then the Neg-S word order would require the subject to stay within VP. This, however, is incompatible with the standard assumption that the subject must move out of VP (Bobaljik and Jonas, 1996), to SpecTP.

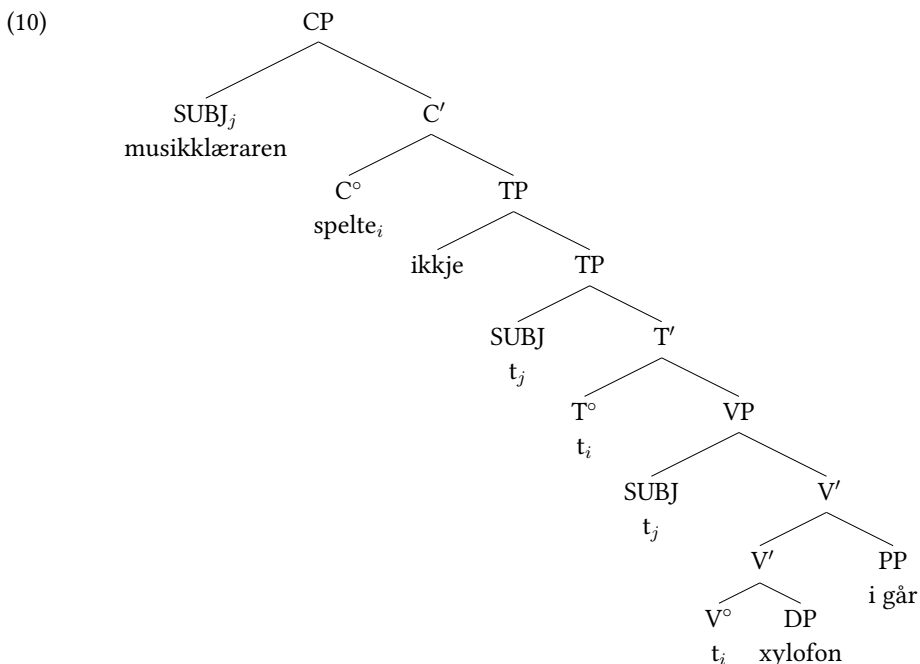
If the subject is in TP, this shows the need for an additional, higher adjunction site. An analysis that treats this second position as adjunction to TP is in (8), following Åfarli and Eide (2003); Eide (2002); Holmberg (1993).



V-Neg orders in main and embedded clauses

The Neg-V order in embedded clauses was introduced above as a case of V in situ, with the presence of a low negation. In main clauses, on the other hand, the verb must precede negation (V-Neg). This is shown in (9). V-Neg order in main clauses follows under the assumption outlined in Section 2.1.1 that the finite verb moves to C in main clauses to satisfy the V2 requirement. An analysis of the clause in (9) is shown in (10), with a high negation for illustration.

- (9) Musikk læreren *spilte* **ikke** xylofon i går
 musicteacher.DEF played not xylophone yesterday
 ‘The music teacher did not play the xylophone yesterday’



As shown in (1b), repeated here as (11), V-Neg order can also occur in embedded clauses (though the clauses that allow this word order are restricted, as we will see later). Following e.g. Julien (2007, 2015), I adopt the analysis of V-Neg in embedded clauses as involving V-to-C movement. In doing so, I adhere to the view that treats embedded V-Neg as a ‘main clause phenomenon’ (Heycock, 2006; Holmberg and Platzack, 1995; Julien, 2007, 2015).

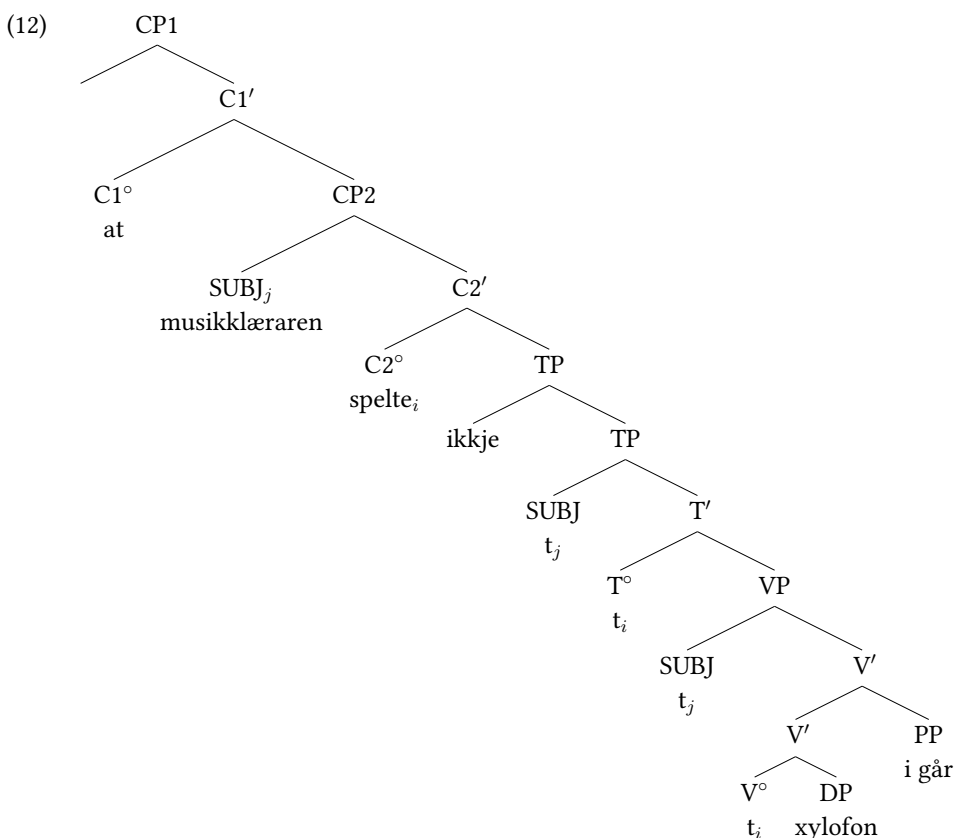
- (11) Olav sa [at musikklæraren *spilte ikkje* xylofon i går]
 Olav said that musicteacher.DEF played not xylophone yesterday
 ‘Olav said that the music teacher didn’t play the xylophone yesterday’

Under this assumption, V moves to a C head above TP in the embedded clause in order to come before negation. In order to precede the verb, the subject raises to the specifier position of that CP. The only challenge that arises with this analysis is how to analyze the complementizer *at*. In (11), the complementizer *at* precedes the subject. If we assume that both subject and verb have moved to C, we need an additional phrase above the lower CP to host the complementizer.

I label the head hosting *at* C1 and the head hosting the moved verb C2, basically adopting the ‘recursive CP’ analysis of Holmberg and Platzack (1995); Vikner (1995).⁴ With these

⁴I use the recursive CP even though a split CP in the tradition of Rizzi (1997) (decomposition into the five phrases ForceP > Top(ic)P > Foc(us)P > Top(ic)P > Fin(iteness)P) is more commonly used today. It is

assumptions in place, we have the structure in (12) for embedded V-Neg.



Analyzing embedded V-Neg in this way also distinguishes the restricted distribution of V-Neg in Norwegian from Icelandic embedded V-Neg clauses. In Icelandic (as will be shown in Section 2.2.1), there is generalized V-to-T movement in embedded clauses, meaning that the canonical word order is V-Neg. Since in Norwegian the V-Neg word order is only restrictively permitted, and therefore viewed as a main clause phenomenon, there must be some essential difference between the two. Syntactically, this is represented as V-to-T in Icelandic and V-to-C in Norwegian embedded V-Neg (see e.g. Julien, 2020).

The assumption of the verb lexicalizing C involves subject movement to SpecCP in subject-initial clauses. However, I assume two other positions to be designated subject

not the purpose of the present work to specify the fine-grained details of the left periphery, and therefore I instead use the larger category C. What is relevant for the present work is that the C-domain (in some way) carries (at least) the ability of anchoring the clause to the discourse. I take discourse-anchoring to involve features such as clause-typing (i.e. the ability to distinguish between declaratives, questions, embedded clauses etc.), illocutionary force, and a sensitivity to discourse information (see Rizzi, 1997).

positions. I will specify these in the following.

Variable subject positions

In the two different orders, S-Neg and Neg-S, the subject is distinguished by different features, both in main and embedded clauses. Most notably, a subject preceding negation is more often a pronoun than a DP, and in contrast, a subject following negation is more often a DP than a pronoun (see e.g. Holmberg, 1993; Westergaard, 2011, and Section 2.2.2). This is illustrated for main clauses in example (13), where a non-subject is fronted and negation is present. In main clauses, DP subjects are more restricted than in embedded clauses: DP subjects almost never precede negation in such clauses (Westergaard, 2011). A DP subject following negation in a main clause is shown in (13a). Pronominal subjects are less restricted to the order where they precede negation, but this is nevertheless the preferred order, shown in (13b). Another feature found to distinguish pre-adverbial subjects from post-adverbial subjects is that the former have a specific reading whereas the latter have a non-specific reading (Bentzen, 2009; Wiklund et al., 2007).⁵

- (13) a. I går spelte **ikkje** musikklæraren xylofon
 Yesterday played not music.teacher.DEF xylophone
 ‘The music teacher didn’t play the xylophone yesterday’
- b. I går spelte han **ikkje** xylofon
 Yesterday played he not xylophone
 ‘He didn’t play the xylophone yesterday’

To capture these observations, the general assumption is that the subject occupies different hierarchical positions in the two word orders, one above and one below a high negation. The possibility of shifting the subject to the upper position is known as subject shift (Anderssen et al., 2010; Westergaard, 2008). Thus, the distinction between S-Neg and Neg-S is that in the former, the subject has undergone a longer move than the subject in Neg-S, past negation adjoined to TP. I follow Holmberg (1993); Westergaard and Vangsnes (2005) in assuming that the high subject resides in a higher specifier position in the I-domain. I refer to this position as SpecSP (which would correspond to SpecA-GRSP in Holmberg (1993); Westergaard and Vangsnes (2005)).⁶ I assume the same subject

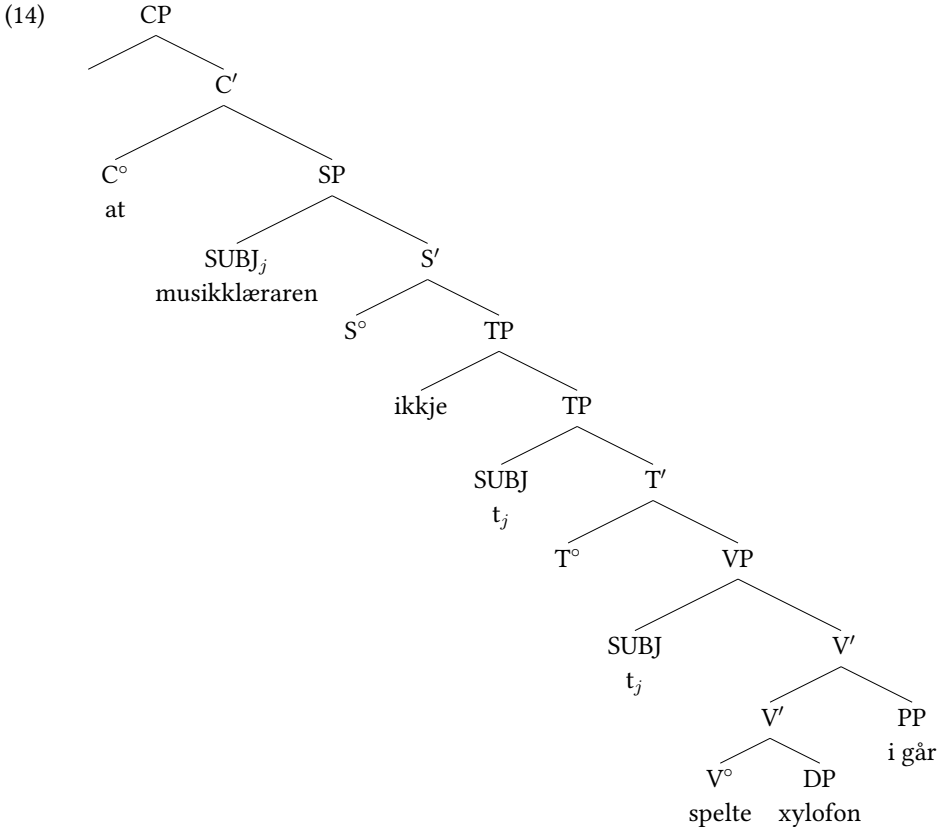
⁵An example of two different readings of specificity is illustrated in (i), from Nilsen (1997), but see also Bentzen (2009); Svenonius (2002).

- (i) a. Røykeforbudet brøt en student vanligvis uansett
 smoking.ban.DEF broke a student usually anyway
 ‘A (specific) student usually violated the smoking ban anyway’
- b. Røykeforbudet brøt vanligvis en student uansett
 smoking.ban.DEF broke usually a student anyway
 ‘One student or other usually violated the smoking ban anyway’

⁶Alternatives are that the higher subject position is found in the C-domain, following e.g. Bentzen (2009); Eide (2011); Wiklund et al. (2007).

positions for main and embedded clauses. For embedded clauses, this was illustrated in (8) with a low subject (Neg-S), and is shown in (14) with a high subject.⁷

The existence of two subject positions and a high negation can lead to ambiguity regarding the position of negation in the Neg-V order. In a clause with the word order Subject-Negation-Verb, the underlying analysis is in fact ambiguous, as the negation can either be placed high or low, and the subject can potentially be in SpecTP or SpecSP.

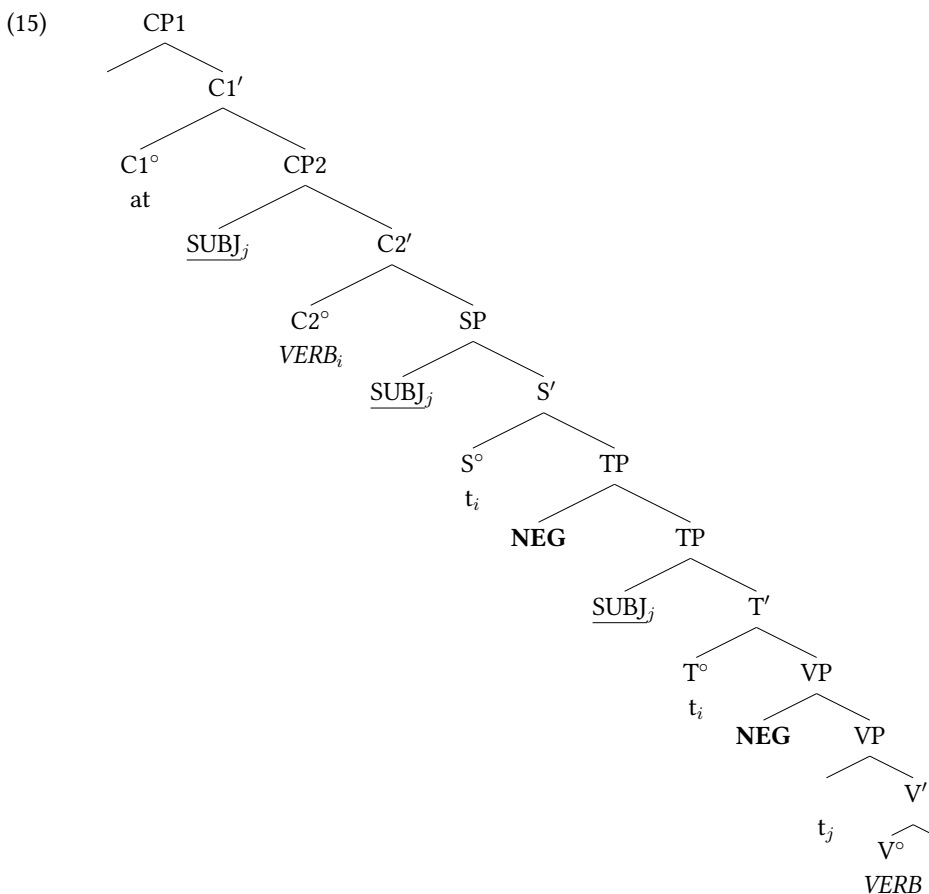


2.1.3 Summary

Having now worked through a range of possible word order variations and their analyses, I summarize them in (15). This summary is meant as a concentrated display of the learning task, in which the learner needs to learn that *i*) subjects must move, some a short distance and some a longer one, both in main and embedded clauses; *ii*) verbs

⁷I recognize that what is here described as two subject positions may also be a result of one subject position and the alternation of two negations in positions higher and lower than the subject. I nevertheless follow the common view that variability in subject placement is related to two subject positions and one negation, based on the different features related to subjects preceding and following negation.

move (V-to-C) in main clauses and a subset of embedded clauses but not in the majority of embedded clauses; and *iii*) negation may appear in a low or a high position.



2.2 Distribution of the word order variation

While the Neg-V word order (1a) is always permitted in embedded clauses, the V-Neg order (1b) and Neg-S order (1c) are conditioned on different factors, and not always permitted in the adult language. What follows is an outline of the main features of these latter two word orders, starting with embedded V-Neg and continuing with Neg-S. A more detailed description of V-Neg is given in Paper 1, and a more detailed description of Neg-S is found in Paper 3. Table 2.1 sums up in which paper each word order is a topic, and (very briefly) mentions in which contexts we might expect to see the three word orders.

Word Order	Claimed to be permitted	Paper
Neg-V	Always	1-3
V-Neg	In assertive or foregrounded complement clauses	1 & 2
Neg-S	When the subject is a full DP or focused pronoun	3

Table 2.1: An overview of some central factors claimed to be relevant to where each word order is found, as well as which paper(s) they are discussed in.

2.2.1 V-Neg

The V-Neg order is an exceptional word order alternative found in embedded clauses in Mainland Scandinavian (Norwegian, Swedish and Danish, but also Faroese; Heycock et al. 2010). Embedded V-Neg is also found in Icelandic, shown in (16), but here it is the generalized embedded word order, not an exception (e.g. Wiklund et al., 2009). Being conditioned, embedded V-Neg in Norwegian therefore differs from that found in Icelandic.

- (16) Ég veit [af hverju Ólafur *spilaði ekki* á sílófón]
 I know why Olav played not on xylophone
 ‘I know why Olav didn’t play the xylophone’

Embedded V2 is an option found in German as well, but also this differs from embedded V-Neg in Norwegian. Whereas both Norwegian and German are V2 languages, where the verb is in the second position in main clauses (shown for German in (17a)) and Norwegian in Section 2.1.1), in embedded clauses the German verb is generally clause-final, as shown in (17b), (e.g. Haider, 1985). In German, embedded V2 is licensed in the absence of an overt complementizer, as shown in (17c) (e.g. Gärtner and Michaelis, 2020).⁸ Whereas Norwegian (in some contexts) allows the complementizer to be omitted, this does not correlate with verb movement or the lack thereof (e.g. Faarlund et al., 1997)

- (17) a. Wir *lesen* jeden Abend isländische Sagas
 we read every night Icelandic sagas
 ‘We read Icelandic sagas every night’
 b. Der Lehrer weiß, dass wir jeden Abend isländische Sagas *lesen*
 the teacher knows that we every night Icelandic sagas read
 ‘The teacher knows that we read Icelandic sagas every night’
 c. Der Lehrer weiß, wir *lesen* jeden Abend isländische Sagas
 the teacher knows that we read every night Icelandic sagas
 ‘The teacher knows that we read Icelandic sagas every night’

⁸Embedded V2 in German is also licensed in other contexts, but these are not of importance here and will not be addressed further.

Exceptional embedded V-Neg (and the larger category embedded V2) are so-called main clause phenomena, since they accommodate the possibility of using the main clause word order in an embedded context. In Norwegian, the embedded V-Neg word order is most typically found in declarative clauses embedded under the complementizer *at* ‘that’, which I will refer to as *that*-clauses. However, a prerequisite for having V-Neg in such clauses is argued to be that the embedding predicate is assertive, an idea that goes back to Hooper and Thompson (1973)’s seminal paper on main clause phenomena (see also e.g. Faarlund et al., 1997; Heycock, 2006; Wiklund et al., 2009). Hooper and Thompson (1973) identify five different classes of predicates according to their status as assertive or factive (which I take to correspond to the addition of new content to the conversation and familiar, presupposed information, respectively (following e.g. Stalnaker, 1974, 1978). (1a), repeated below as (18a), shows V-Neg under the assertive matrix predicate *sa* ‘said’. Correspondingly, V-Neg is argued to be illicit in *that*-clauses embedded under a factive predicate, such as *angre på* ‘regret’ (Wiklund et al., 2009), illustrated in (18b).

- (18) a. Olav sa [at han *spelte ikkje* xylofon i går]
 Olav said that han played not xylophone yesterday
 ‘Olav said that he didn’t play the xylophone yesterday’
 b. *Olav angra på [at han *spelte ikkje* xylofon i går]
 Olav regretted on that han played not xylophone yesterday
 ‘Olav regretted that he didn’t play the xylophone yesterday’

Some clause types are claimed to completely disallow the V-Neg order. This is the case for relative clauses as well as embedded *wh*-questions (Franco, 2010) (an example with a relative clause shown in (19)).

- (19) *Guten som *spelte ikkje* xylofon
 boy.DEF who played not xylophone
 ‘The boy who didn’t play the xylophone’

Lastly, for some clause types, it is not clear whether V-Neg is permitted or not. This is the case for adjunct clauses with the complementizers *fordi* ‘because’ and *slik at* ‘so that’ (Faarlund et al., 1997; Heycock, 2006; Hrafnbjargarson and Wiklund, 2009; Bentzen, 2011).

- (20) ?Olav spelte xylofon [slik at han *skulle ikkje* kjede seg]
 Olav played xylophone so that he should not bore REFL
 ‘Olav played the xylophone so that he would not be bored.’

While the above mention of V-Neg as licit vs. illicit in assertive vs. factive complement clauses respectively might seem to indicate clarity on what licenses V-Neg, this is not

the case. Even though embedded V-Neg has been discussed extensively in the literature, issues concerning this word order are not settled, and there is great theoretical disagreement on what the appropriate factors (dis)allowing it actually are. In Paper 1, I categorize approaches to this in two coarse categories: Semantic licensing and pragmatic licensing. The first line of argumentation is that V-Neg is possible in clauses selected by a predicate of a particular semantic type (Djäv et al., 2017, on Swedish). This follows the approach discussed above, where V-Neg is permitted in assertive complements, but not in factive (as in Hooper and Thompson 1973).

The second line of argumentation is that the licensing of V-Neg is related to pragmatic factors. Wiklund et al. (2009) and Jensen and Christensen (2013, on Danish) both argue that the V-Neg word order correlates with whether the embedded clause constitutes the core meaning of a sentence, i.e. the part of a clause that can be questioned or denied, or whether the embedded clause receives more focus than its Neg-V counterpart. This is referred to as the *MAIN POINT OF THE UTTERANCE* in Wiklund et al. (2009) and *FOREGROUNDING* in Jensen and Christensen (2013). Julien (2010, 2015) directly links the presence of V-Neg to the speaker: Even a presupposed (factive) clause may have an assertive function in that it can be used as a reminder of previously introduced information – used as a reminder, it conveys new information to the hearer. Paper 1 goes further into detail on the argumentation for each of these approaches. For the present purposes it suffices to point out the various approaches to the topic, to give an insight into the theoretical disagreement.

In spite of the amount of literature on this word order, it seems it is not adequately empirically studied. The existing literature often uses introspection when discussing the acceptability of V-Neg, and when speaker data are used (e.g. corpus data in Julien, 2010), the full ranges of possible as well as impossible contexts for V-Neg are not considered. It is possible that the theoretical discrepancies in what licenses the V-Neg word order are in part caused by the lack of actual speaker data and a comprehensive overview of all contexts permitting V-Neg. This dissertation wishes to contribute to the empirical and theoretical debate by carrying out a comprehensive empirical study of the V-Neg word order. This is done in the form of a corpus investigation in Paper 1. An additional function of gaining a (more) exhaustive empirical overview of the V-Neg order is that it might aid studies of acquisition of the phenomenon. Studying how children acquire any given feature necessitates comprehensive and complete knowledge of the input and target state to the extent possible. To maximize the clarity of generalizations, such a study should consider speaker data from one language, broken down into relevant contexts, such as clause types. This is also done in Paper 1.

2.2.2 Neg-S

The Neg-S order is also a word order alternative found in embedded clauses in Mainland Scandinavian (although Danish seems to deviate from Norwegian and Swedish in what contexts allow it; see Garbacz 2014; Ørsnes 2012). As opposed to the V-Neg word order,

the embedded Neg-S order, shown in (1c) above, repeated in (21), is not much addressed in the literature. Section 2.1.1 showed that both main and embedded clauses in Norwegian have the possibility of both high (S-Neg) and low (Neg-S) subjects in the presence of negation.⁹

- (21) Olav sa [at **ikkje** musikklæraren spelte xylofon i går]
 Olav said that not musicteacher.DEF played xylophone yesterday
 ‘Olav said that the music teacher didn’t play the xylophone yesterday.’

In general, it is argued that the Neg-S word order order is facilitated by the type and information value of the subject, i.e. information structure. The high subject position is argued to be a topic position, and the low subject position to be a focus position. This entails that the high position contains material referring to a known referent in the discourse and the low position contains discourse-new information (e.g. Westergaard, 2011). Given knowledge from previous studies considering acceptability judgements on this topic, and that known information is typically expressed through a pronoun or definite DP while new information is typically expressed through indefinite DPs, Westergaard (2011, 3) notes that the following must be assumed of the distribution of subjects in Norwegian: ‘Pronouns obligatorily appear in the high position (unless stressed), while full DPs may appear in either position, depending on discourse factors (specificity, given/new, focus etc.)’. This distinction was shown in Section 2.1.1, example (13), repeated below as (22).¹⁰

- (22) a. I går spelte **ikkje** musikklæraren xylofon
 Yesterday played not musicteacher.DEF xylophone
 ‘Yesterday the music teacher didn’t play the xylophone’
 b. I går spelte han **ikkje** xylofon
 Yesterday played he not xylophone
 ‘Yesterday he didn’t play the xylophone’

While such a distribution has been assumed in the literature on Norwegian, particularly for main clauses, corpus studies of adults’ production (in main clauses) reveal a somewhat different pattern. They reveal that unstressed pronominal subjects are used in the high position, as expected, but also can appear in the low position (Johannessen and Garbacz, 2011; Westergaard, 2011). In contrast, full DP subjects are almost exclusively used in the low position: 97.7% of DP subjects are found in the Neg-S constellation in corpus production (Westergaard, 2011) (see Paper 3 for more detailed numbers). As in Paper 3, here I also draw a distinction between pronominal and DP subjects, the latter

⁹The previous sections showed the two subject positions in main and embedded clauses as identical (SpecSP and SpecTP), even though it is not clear from existing literature that the two are identical with respect to the subject’s distribution. This issue is not addressed in the study in Paper 3, but should be investigated in future research.

¹⁰An additional observation is that (quantified) subjects following negation can only have a non-specific reading (Brandtler, 2008; Bentzen, 2009).

meaning lexical DPs.¹¹

It is not clear whether the distribution of subjects in embedded clauses is identical to that of main clauses, but there are indications the two might differ. First, corpus findings indicate that pronominal subjects have a similar distribution in embedded and main clauses (used most often in the high position), but that DP subjects vary substantially in their placement in embedded clauses. Whereas nearly all DP subjects follow negation in main clauses, Westergaard (2011) finds that in embedded clauses the same is the case in only 64.7% and 26.3% of cases (numbers from two different corpora). As pointed out by Westergaard (2011), the raw numbers of DP subjects here are low, N=17 and N=38 in the two corpora. Additionally, numbers from the two corpora differ from each other. These observations raise questions about whether the distributions of DP subjects in main and embedded clauses in fact differ to such an extent, or whether this is an artefact of a low number of relevant occurrences, and also what the prevalence of DP subjects in embedded clauses actually is. This warrants further investigation. Second, even though findings in studies of main clauses indicate that low pronominal subjects do not need to be stressed, there is a question of whether the same is the case for such subjects in embedded clauses, as illustrated in (23).

- (23) Eg såg [at **ikkje** HAN spelte xylofon i går]
 I saw that not he played xylophone yesterday
 'I saw that he didn't play the xylophone yesterday.'

Finally, two issues pertaining to the embedded Neg-S order are rarely given explicit mention in the literature. The first is whether this word order is more or less acceptable depending on clause type. The second is whether the Neg-S word order is ever ungrammatical, or if it is just more or less suitable or felicitous. There are indications that this word order alternative is in fact deemed unacceptable, or ungrammatical, in certain clause types. In an acceptability judgement carried out in the Scandinavian languages, Norwegian informants reported that the Neg-S order is more acceptable in *that*-clauses than in adverbial clauses (Garbacz, 2014).¹² The adverbial clause judged in Garbacz (2014) is one with the complementizer *da* 'when'. The clause is deemed ungrammatical by most speakers. Existing corpus studies of the Neg-S order tackle this issue in different manners. Garbacz (2005) studies the Neg-S and S-Neg orders in Norwegian (as well as in Swedish and Danish) through one corpus of spoken language and two of written language. Here, the Neg-S order is found to be more common in *that*-clauses and *if*-clauses than in relative clauses and *because*-clauses. However, it is not clear to what extent we can make the same generalization for written language as for spoken, and the numbers from the spoken corpus in this study are relatively low (in total 36 clauses). Westergaard

¹¹Paper 3 distinguishes pronominal and NP subjects.

¹²The Neg-S order receives a low acceptability score from some dialects, but is generally accepted in the Trøndelag dialect which is represented in Paper 3. See Section 2.3 for an overview of dialectal variation in Norwegian.

(2011) looks at occurrences of Neg-S in two corpora of spoken language and includes all types of embedded clauses. This yields a much larger number of clauses but uncertainty regarding more specific generalizations, as all embedded clauses are grouped together.

Despite the two available subject positions in Norwegian often being addressed as displaying a clear-cut distinction between given subjects in the high position (expressed by pronouns or definite DPs) and new or focused subjects in the low position (expressed by indefinite DPs or occasionally pronouns), this section has shown that the subject distribution in embedded clauses is not well established. In contrast, in main clauses, DP subjects are preferred in the low position (as found by Westergaard, 2011), existing numbers for subject prevalence in embedded clauses deviate, and there seems to be particular uncertainty around DP subjects' distribution. However, existing studies do not examine every aspect of DP subjects. An examination of different features of high and low DP subjects in embedded clauses might reveal additional information about their distribution. For embedded clauses there is also less speaker production data available since embedded clauses are more infrequent than main clauses in speech. Thus, there is a need for further studies of negation and subject ordering in embedded clauses, since more data might reveal more accurate information about the prevalence of different subject types, thereby informing our understanding of factors affecting the use of the high and low subject positions. Such a study is carried out in Paper 3, through a corpus investigation. Here, only *that*-clauses are studied, since this clause type is shown to permit Neg-S, as well as providing the possibility for comparison with the embedded V-Neg order, which is also studied in *that*-clauses (amongst others). Additionally, similarly to the V-Neg clauses, the foundational first step of studying language acquisition is establishing what the child's input grammar is, and thus further studies of embedded Neg-S in the adult language might aid studies of acquisition of the phenomenon.

2.3 Dialectal variation

Norwegian displays considerable dialectal diversity, and the use of Neg-S (and possibly V-Neg) may be subject to dialectal variation. Dialectal areas and differences are mentioned in passing in the papers and parts of this cover article. Therefore, in this section I provide a short introduction to the dialectal situation in Norway, to provide the reader with a basic understanding of how dialects might differ with respect to the word orders studied here. I will also show how the main dialectal area studied here (the experimental studies in Papers 2 and 3 only include participants from the Trøndelag area; see map below) displays generalizations regarding subject placement that might differ from those outlined above. However, the results of the present studies do not seem to be affected by this.

The Norwegian dialects are mutually intelligible (perhaps with the exception of occasional lexical divergences), and there is no spoken standard variety of the language. Hence, dialects are used and accepted in all situations and arenas, such as at school and in universities, on TV and radio and in the parliament (Røynealand, 2009; Skjekkeland,

2010). Isoglosses between the different dialects are typically drawn based on phonological and morphological features (see e.g. Skjekkeland, 2005; Papazian and Helleland, 2005; Skjekkeland, 2010; Mæhlum and Røyneland, 2012, for a detailed introduction and overview).¹³ The phonological and morphological criteria for dialect classification are well known and have a long tradition within dialect research. Syntactic differences, on the other hand, specifically the availability and prevalence of word order generalizations across dialects, are less discussed, so the extent of inter-dialectal variation remains unestablished.¹⁴

As a part of the Nordic Atlas of Language Structures (NALS)¹⁵, some word orders have been studied through acceptability judgements across dialects. It was found that V-Neg embedded under a factive matrix predicate is generally rejected, except in a few scattered geographical areas. In contrast, V-Neg embedded under a semi-factive matrix predicate is generally accepted, with the exception of dialects especially in the southern parts of the country (Bentzen, 2014). Neg-S was also investigated in a similar fashion, which revealed that some dialects are more prone to accepting this word order (this is the case for the coastal dialects in the west and up to the Nordland area in the north) (Garbacz, 2014). However, whether all such syntactic variation constitutes actual isoglosses is not yet fully investigated: As pointed out by Lundquist et al. (2019), word order variation might reflect individual variation, but it might also be subject to geographic and thus dialectal variation.

The possibility of dialectal differences is dealt with differently in the papers in this dissertation (an issue further discussed in the methodology chapter (Chapter 4)). Both of the corpus studies (on V-Neg in Paper 1 and Neg-S in Paper 3) include language production from speakers from all over the country. This means they do not isolate one specific dialect. However, Paper 1 contains an overview (Table A2 in the appendix) where the production of V-Neg and Neg-V is plotted by dialectal area. As Chapter 4 will discuss, the reason to study speaker data from different dialects is to gain a larger sample. There are very few (relevant) existing data from only one dialect available in corpora. However, this means that these studies potentially cover differing dialectal generalizations. The experimental studies, however, encompass speakers (both children and adults) from only one dialectal area, the Trøndelag dialect, specifically from the city Trondheim within the larger Trøndelag region, shown on the map in Figure 2.1.

¹³The former includes prosody and intonation, stress, and pronunciation of specific phonemes. The latter includes declension suffixes of (definite) nouns and verbs as well as presence or absence of (non-productive) dative expressions. Furthermore, realizations of pronominal forms vary greatly. An example of the variation of pronominal forms is the first person plural, which is realized as *vi*, *oss*, and *me* in different dialects (Skjekkeland, 2005, 110).

¹⁴There are indications that some word order alternatives might only be found in certain dialects: the V2 requirement is not present in *wh*-questions in many dialects (well known cases include the Tromsø dialect in the northern part of the country and the Nordmøre dialect in the western part of the country; see also Section 3.1.1), whereas the dialect(s) around the capital area (Oslo) adhere to the V2 requirement in such clauses (e.g. Åfarli, 1986; Westergaard and Vangsnes, 2005; Westergaard, 2009).

¹⁵<http://www.tekstlab.uio.no/nals/>



Figure 2.1: *The Trøndelag region of Norway including the city of Trondheim, indicated by the dot.*

The Trøndelag dialect has two features that can cause it to vary from the standard generalizations outlined above, namely the realization of negation and pronouns. While the standard, or ‘plain’, form of negation in Norwegian is the bisyllabic *ikke*, the Trøndelag dialect has traditionally used a monosyllabic realization of negation *itj* (Østbø Munch, 2013, 19). Monosyllabic negation is known to appear in word orders other than those in which one finds the standard negation *ikke*. An important aspect for the present studies is the way it interacts with subjects. Whereas, as outlined in Section 2.2.2, pronominal subjects in Standard Norwegian typically precede negation, the situation is different with the monosyllabic negation. As shown in (24a), pronominal subjects may follow it (Faarlund et al., 1997, 881). An additional feature found in the Trøndelag dialect is that of pronominal clitics (*han*/‘*n*’ ‘he’, *ho* - ‘*a*’ ‘she’). The word order where an unstressed pronominal subject follows negation is especially common with the monosyllabic negation and a clitic pronoun (Hellan, 1996; Østbø, 2006), as shown in (24b). However, the Trøndelag dialect also allows the word order where the subject precedes negation, shown in (24c). The illustrations here are with a main clause, but the same is true for embedded clauses.

- (24) a. I går svømt **itj** han
 yesterday swam not he
 ‘Yesterday he didn’t swim.’
 b. I går svømt **itj** ‘n’
 yesterday swam not he

- ‘Yesterday he didn’t swim.’ .
- c. I går svømt han/‘n’ itj/ikke
 yesterday swam he not
 ‘Yesterday he didn’t swim.’

While such dialectal features are potentially confounding factors when studying the S-Neg/Neg-S orders in the Trøndelag dialect, the monosyllabic negation *itj* is currently in decline in the dialect, being replaced by the standard negation *ikke* (Hårstad, 2010; Østbø Munch, 2013). This is also reflected in children’s and adults’ production in the studies in this dissertation, in which there are extremely few occurrences of the monosyllabic negation. It therefore seems unlikely that participants’ production in the experimental studies in Papers 2 and 3 is influenced by the particular dialectal possibilities addressed here. However, these observations give rise to questions for further research of particular importance for dialectal research (e.g. is the monosyllabic negation still used at all in the Trondheim dialect or that of Trøndelag more broadly, and if so where and in what contexts?) but also for further understanding the distribution of the subject (e.g. to what extent does availability of monosyllabic negation and clitic pronouns influence subject placement in speaker production?).

As has become clear through this presentation of Norwegian dialects and dialectal features relevant for the word order studies in this dissertation, the dialectal restrictions on embedded V-Neg and Neg-S are unknown. It is not the ambition of the present studies to provide substantially new knowledge about dialectal effects on these word orders. However, as mentioned above, possible dialectal differences are accounted for by only including participants with similar dialectal backgrounds in the experimental studies. The overview given here is meant to equip the reader with a basic understanding of how dialectal variation might play a role in these word orders, and to highlight the importance of further research into the issue.¹⁶

2.4 Chapter summary and goals of this study

The purpose of the present chapter has been to provide background on Norwegian, specifically on the word order variation encompassing embedded Neg-V, V-Neg and Neg-S, as well as dialectal aspects of Norwegian potentially relevant for the embedded word orders. This has been done to identify knowledge gaps concerning these word orders in adult language, and to give a complete picture of our current knowledge of the input Norwegian children encounter.

This chapter has shown that Norwegian exhibits three possible word orders in embedded

¹⁶A starting point for such further research is the Nordic Word Order Database (<https://tekstlab.uio.no/nwd>) (Lundquist et al., 2019). This database, launched in 2019, provides speech data from the Northern Germanic languages, elicited through controlled production experiments. Thus it can be used to investigate whether differences in production and acceptance of different word order variations are caused by dialectal variation or individual preferences.

clauses when negation is involved. The important generalizations for the adult language are: main clauses have the word order V-Neg, and two subject positions are available in non-subject initial clauses (S-Neg and Neg-S). Embedded clauses, when containing negation, have the word order Neg-V. A subset of embedded clauses may display the word orders V-Neg or Neg-S, which are both argued to be conditioned on different semantic, pragmatic and categorical factors. I mentioned that the exact licensing conditions for V-Neg are subject to disagreement. Moreover I showed that the Neg-S word order is generally argued to be allowed when the subject is a DP, or sometimes a pronoun, but that more data is needed to establish a clearer picture of the prevalence across the two subject positions in embedded clauses. The next chapter will discuss variation in the context of first language acquisition, showing how the word order variation outlined here is an advantageous object of study for this field.

Chapter 3

Background: First language acquisition

Children are generally found to use the basic word order of their target language from early on. For example, English children's two-word utterances are typically Subject-Verb, as shown in (1), and Verb-Object, as shown in (2) (both examples from Brown (1973, 205), both in alignment with the target word order.

(1) Mommy fix [Eve, stage I]

(2) Hit ball [Adam, stage I]

While these basic word orders are both relatively simple and occur frequently in children's input, for the word order variation outlined in the previous chapter, the situation is the reverse. That variation occurs in embedded clauses, which can be viewed as a more complex environment. Additionally the relevant data are relatively infrequent in children's input, since embedded clauses are more infrequent than main clauses, and embedded clauses with negation are even more rare (see Papers 2 and 3 for details). Furthermore, the variation presented in Chapter 2 is conditioned, so it is not the case that one can optionally choose one of the word orders at random. How do children deal with this variation?

In this chapter I will address some relevant aspects of the issue of variation in acquisition. Along the way I will show that despite the extensive amount of research on (first) language acquisition, foundational issues have yet to be settled, and more research is needed. The present work focuses on a subset of these issues. Under the assumption that a child must make some generalizations, or in other words, settle on rules of her target language, I start by considering what these rules might be, such that they enable the child to accurately acquire word order variation. Furthermore, the rules children

learn as they acquire their target language are debated and not fully explored, raising questions of whether children might learn broad/large rules initially, i.e. assume only the most accessible word order (which might be Neg-V, only considering embedded clauses), later on making exceptions, or alternatively, whether they might learn small rules initially, comprising all three word orders. Next, I turn to discuss what children are able to perceive from their input, i.e. what constitutes usable input for them. This has importance both for the question of whether children initially perceive the variation at all, and whether they are able to grasp the concepts relevant for licensing of V-Neg and Neg-S. The second part of the chapter contains an overview of previous studies on children's acquisition of verb and subject placement, showing that our current knowledge needs to be expanded.

3.1 Accounting for variation

3.1.1 Rules

In order to reach the target grammar, i.e. the language-specific inventory of rules for acceptable and unacceptable utterances, the child must look for and discover patterns in the input that she can form generalizations, or rules, about. This follows from the logical problem of language acquisition (or 'the poverty of stimulus argument'; see e.g. Chomsky 1986; Pinker 1989; Berwick et al. 2011; Lasnik and Lidz 2016), namely that children acquire the infinite amount of sentences comprising their target language by use of only a finite set of these sentences. This implies that children must seek patterns in the finite set of input they perceive and form rules for their target language based on these input patterns. In the following, I will show that children must necessarily at some point make, or arrive at, small rules for their target language in order to encompass the embedded clause word order variation in Norwegian.

In the introduction I framed the present work within the theoretical framework of generative grammar. One of the foundational assumptions of generative grammar has been the existence of principles and parameters (Chomsky, 1981), i.e. some universal elements (principles) and parameterized cross-linguistic variation. Importantly, in the present work I will remain agnostic with respect to the existence of parameters (as innate switches), and rather think of them as large rules. The idea behind parameters was initially to group properties that in some way were related to each other, explaining how the learning task could be solved so quickly and easily. In this way, a parameter represented 'clusters of properties' (Lasnik and Lohndal, 2013, 52) that could all be fixed based on information from one of these properties.¹ A macro-parameter relevant for the topic of the present studies would be one of [+/- verb movement]. However, as has been demonstrated by the word order variation in Chapter 2, languages contain many small points of variation. These cannot be accounted for by major parameters, or rules, because large rules are not

¹For example, the correlation of null subjects and the 'that-trace effect' is discussed as belonging to the same parameter (Rizzi, 1982; D'Alessandro, 2015).

detailed enough. For example, the word order variation in embedded clauses in Norwegian cannot be covered by one large rule of generalized verb movement because verb movement is dependent both on clause type and extra-syntactic factors, such as semantics of embedding predicates, and pragmatic factors (see Section 2.2.1 for details on what influences verb movement past negation, and Westergaard 2009 for a detailed account of distinct cases of verb placement in Norwegian). Since syntactic parameters cannot incorporate such conditioned, contextualized variation, this shows the need for a different way of accounting for the acquisition of variation. This has led to a reformulation of the learning task and how to incorporate such language-specific details.

An alternative to acquisition beginning with large rules is that the child learns small rules, or makes detailed generalizations. Small rules can encompass fine-grained variation, as they will allow the child to form separate generalizations about e.g. verb movement for different clause types.² This view of acquisition is found in one prominent approach to acquisition called the micro-cue model (Westergaard, 2009, 2014). In essence, this approach suggests that children are sensitive to fine-grained details of their target language from early on, and reach the target grammar by learning small rules incorporating both syntactic and extra-syntactic information (i.e. micro-cues). This entails that children are sensitive to clause types and information structure, which were shown in Chapter 2 to be important for the embedded word order variation in Norwegian.

An essential observation for this view of acquisition is that children are aware of intricate variation in *wh*-questions in Norwegian from a very young age. The variation in question involves the presence or absence of verb movement in certain types of *wh*-questions, shown in (3) and (4).³ Even though Norwegian is a V2 language (as addressed in detail in Chapter 2), such questions with a monosyllabic *wh*-word (*ka*, *kem*, *kor*, ‘what’, ‘who’, ‘where’), allow non-V2, in addition to V2, as shown by the alternation in (3a) and (3b) (Westergaard, 2009). In contrast, with a longer *wh*-word, this possibility is not available, as shown by the unacceptability of (4b). Thus, there is considerable variation with respect to verb placement, both across and within clause types. Notably, this variation is reflected in early child production, meaning that children are aware of the factors relevant for this word order variation (Westergaard, 2009).

- (3) a. Kor *bor du*?
where live you

²Detailed variation has typically been associated with the notion of micro-parameters (e.g. Kayne, 2000). Micro-parameters have been at the center of large debates surrounding parameters, and part of the discussion pertains to their learnability. While the notion of micro-parameters better captures small points of variation than that of major parameters, it has been seen as problematic that this is all they do: They are only descriptions of language-specific variation (e.g. Boeckx, 2014). The difficulty of accounting for how acquisition happens through parameter setting in the face of fine-grained variation has led some accounts of acquisition to disregard parameters (e.g. Westergaard, 2009).

³This phenomenon is subject to dialectal variation, most notably observed and discussed for the Northern Norwegian Tromsø-dialect (Westergaard and Vangsnes, 2005; Westergaard, 2009), as well as the West Coast Nordmøre dialect (Åfarli, 1986). See also Section 2.3.

- ‘Where do you live?’
- b. Kor du bor?
 where you live
 ‘Where do you live?’
- (4) a. Kvifor *spelte* han xylofon?
 why played he xylophone?
 ‘Why did he play the xylophone?’
- b. *Kvifor han *spelte* xylofon?
 why he played xylophone?
 ‘Why did he play the xylophone?’

While (major) parameters were used to as a way to explain the ease and speed of children’s language learning, approaches assuming that children acquire small rules must account for learnability in other ways. Typically, children are thus argued to acquire the target language by taking small steps. Here I will highlight two ways in which that might happen. First, this view entails that the child builds a target grammar consisting of many small rules, i.e. their grammar is large but each rule has a narrow extension. Acquisition happening in this way is often discussed as being conservative, since it involves a very limited risk of making (large) erroneous assumptions about the target grammar. Thus, assuming that children reach the adult state in a conservative way addresses a fundamental component of the logical problem of language acquisition, namely that children only receive positive evidence, meaning that *i*) they do not encounter structures that are not a part of their target-language and that any absent structure is not evidence of ungrammaticality, and *ii*) they are not explicitly corrected on their assumptions deviating from the target language, and nevertheless do not learn from such correction even if receiving it (e.g. Bowerman, 1988) (see also Snyder (2007, 2011) for conservatism in acquisition). If children were to start out by settling on a large rule for verb movement in their language, even though they would encounter no evidence for verb movement in embedded clauses, this would not be evidence that there should not be verb movement in such clauses. Thus, the child might not be able to rule out, and retract from, the initial assumption. For this reason, it is safer for the acquirer to ‘wait and see’ and be observant of detailed contexts before settling on a rule for the target grammar.

The second way of taking small steps towards the target grammar is by invoking some principle of elegance (Clark and Roberts, 1993) or economy (Westergaard, 2009). This involves children having a general preference for using the lowest available position, i.e. the position involving the least amount of movement, such that they avoid costly syntactic movement and only ‘move elements as far as there is evidence for in the input’ (Westergaard, 2009, 216). For example, this means that if children encounter an SVO-clause, which is ambiguous with respect to verb movement, they will assume that there is no verb movement (or short verb movement, i.e. V-to-T; Clark and Roberts 1993, but see also Heycock and Wallenberg 2013 on this issue). Under such a view, children are thought to expand their analysis of the target grammar by moving elements as they encounter

sufficient evidence that they should (Westergaard, 2009). Relating this approach to the embedded word order investigated here, we might expect to see children using only the word orders Neg-V (no verb movement) and Neg-S (no subject movement). However, as Section 3.2.1 and Papers 2-3 will show, this is not what we find. This is also subject to discussion in Chapter 6.

To end this section, I will note that it might not be the case that children learn exclusively either large or small rules: they might learn both. This is entailed by the micro-cue approach (Westergaard, 2009) outlined above: Children start out learning small rules, and based on positive evidence they can move on to bigger rules. Another view is that children might posit rules along a hierarchy, where they look for large patterns or regularities first, before moving towards smaller classes or idiosyncratic items. This entails that children form both large and small hypotheses about their target language, depending on the material they are hypothesizing over, and is suggested by Biberauer and Roberts (2012). Moreover, the child might first assume a default rule before moving on to making exceptions, as in Yang (2002)'s suggestion about children's production of regular vs. irregular verb forms.⁴ Yang (2002) refers to 'default first, exceptions later' as a conservative approach, *contra* the view addressed above.

3.1.2 Input

While the previous section addressed the issue of the size of rules, this section will address another crucial aspect of the acquisition process, namely the input and its sub-component, *intake*. A necessary part of acquiring a language is the linguistic input (also known as primary linguistic data, or PLD). As long as we (loosely) define input as everything linguistic in the child's environment, it is highly unlikely that the child is able to perceive and make use of the total input. There are two main arguments for this. The first is that children will not be attuned to, or equipped to perceive, what is too complex for their stage of development (Pearl, 2020).⁵ The second is that acquirers seek to discover patterns and regularities in the noisy linguistic data they encounter, and to do so they might ignore parts of it (Fodor, 1966, 109). This must mean that children filter their input and only make use of a small amount of it. Such a filtering of the input makes variation a particularly challenging feature for acquisition — but even more enlightening for acquisition research. It raises questions such as whether children are able to perceive all

⁴Another relevant aspect of Yang (2002)'s approach is that the child, rather than making assumptions about certain parts of her grammar (e.g. specific clauses), makes assumptions about large grammars at once, i.e. the child works with the *global* grammar instead of the *local* parts of her grammar. Thus, the child is assumed to form hypotheses about verb movement such as 'Is my grammar Dutch or Hebrew with respect to verb movement?'

⁵This is often called the Goldilocks effect, after the fairytale of Goldilocks and the three bears who would only eat the bowl of food that was 'just right'. In acquisition, it refers to the assumption that children will be attentive to the parts of their input that are 'just right' at their developmental stage. This means they will ignore the parts of the input that are too complex for them, and minimize their attention to the parts of the input that have become 'too simple', i.e. that they have already accounted for (e.g. Biberauer, 2019, 4).

parts of the input relevant for variation, and what parts of the input children actually do pay attention to.

The subset of the input that children are able to perceive is referred to as the intake. This is illustrated by a model of the acquisition process shown in Figure 3.1, based on Lidz and Gagliardi (2015). Here, acquisition is shown to comprise two external components (input and behaviour) and two internal components, which I refer to as *intake* and *rules*. While the previous section addressed rules, the following will discuss input and intake. Specifically, two questions will be addressed. First, what in the input might we expect children to include in the intake at any given stage, i.e. what can we expect the child to perceive? Second, when the child generalizes over a set of sentences to arrive at a rule, what in the input does the child generalize from, i.e. what is relevant input, or evidence?

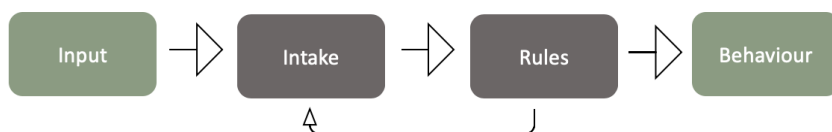


Figure 3.1: *The language acquisition process happens on different levels, involving different components. The model shown here is a simplified version of the acquisition model presented in Lidz and Gagliardi (2015). The model shows two external components, input and behaviour, and two internal components, intake and rules. It also indicates an iterative process between intake and rules.*

If children are not equipped to perceive any degree of complexity at any given stage of their development, they might use simple environments as evidence for complex environments. For example, if children are not able to perceive more complex sentences, they might base hypotheses about their whole target language on only simple sentences. Under this scenario, the child would use the word order from main clauses to form assumptions about the embedded clause word order in early production. For the variation in embedded clauses in Norwegian, this entails young children using the main clause word order V-Neg, and possibly Neg-S, in embedded clauses, but not Neg-V (the canonical embedded word order). A scenario where the child only learns from un-embedded material, i.e. simple evidence, is predicted by a degree-0 learnability approach (Lightfoot 1989, also endorsed in Lightfoot 2020).⁶ Initially learning from un-embedded material is also predicted by a developmental view, such as that found in Lidz and Gagliardi (2015), where the intake and rule components of the acquisition device are thought to be parts of an iterative, incremental approach. That is, the more structures the child has encountered and defined as part of the target grammar, the more she will be able to perceive in the input and therefore be able to include in the intake, where she analyses it.

Complexity is not the only factor relevant for what subset of the input the child considers. The frequency with which a structure occurs in the input is also likely to play a role (see e.g. discussion of this in Westergaard and Bentzen, 2007). If a certain structure

⁶Although note that it is not clear that the degree-0 suggestion is related to what children are able to perceive, as it is rather discussed as embedded environments not triggering rules.

is very infrequent in the input, the child might not encounter it at all for some time, meaning it cannot be a part of the subset of input she is generalizing over. Moreover, even when the child does encounter the relevant structure, she needs to come across it enough to find a pattern (i.e. decide that some occurrence is not an anomaly). The embedded clause word order variation under discussion constitutes an interesting case for this issue because the alternative word orders V-Neg and Neg-S are highly infrequent in adult speech (see detailed numbers in Papers 1-3). This means children rarely encounter it in their input. This is especially true for the Neg-S order. Thus, there is a question of whether young children have encountered embedded V-Neg and Neg-S at all. Paper 3 discusses the possibility that some young children might not have encountered Neg-S.

Finally, I will consider *what* needs to be frequent in order for a child to acquire a rule in early acquisition. By this I mean: What does the child use as evidence when learning the rules of her target language? While some literature argues for the possibility that children use only ambiguous evidence when learning their grammar (e.g. Gould, 2017), a more common assumption is that the child only considers unambiguous evidence (e.g. Yang, 2002; Westergaard, 2009). For the word orders considered here, this means: Do children use SVO clauses, in which verb movement is not visible, or perhaps SVNegO clauses, in which verb movement is not unanimously V-to-C (see chapter 2), to make general assumptions about their V2 language? Also, do children use evidence from main clauses to form the basis of generalizations about embedded clauses? An assumption within the the micro-cue model outlined above is, for example, that children form assumptions about their target language based on small environments. This means that to arrive at a rule regarding verb movement in *wh*-questions with long *wh*-elements (described above as having obligatory verb movement), children would only use the verb's position in *wh*-questions with long elements as evidence (see Westergaard, 2009), or for children to hypothesize a V2 rule for declaratives, they would only look at non-subject initial declarative clauses in their input (Westergaard, 2014). If this is representative of what children use as evidence in acquisition, it is expected that they only use V-Neg clauses to learn rules of verb movement yielding V-Neg, and most likely that they use verb movement in declarative main clauses as evidence only for such clauses. In contrast, they will use verb movement in (for example) assertive *that*-clauses as evidence only for such clauses. A discussion of what children use as evidence for embedded V-Neg, Neg-S and Neg-V will follow in Chapter 6.

3.2 Previous studies on acquisition of variation

This section addresses previous studies on children's acquisition of variation relevant to the embedded word orders studied in this dissertation, namely acquisition of verb placement and subject placement.

3.2.1 Acquisition of verb placement

In Chapter 2, German was mentioned as an interesting comparison to Norwegian when studying verb placement. Both Norwegian and German are V2 languages, having the verb in the second position in main clauses, shown for German in (5a), a repetition of (17a) in Section 2.2.1, and Norwegian in (5b). However, embedded clauses in German are generally verb-final (e.g. Haider, 1985), as shown in (6a) (a repetition of (17b) in Section 2.2.1). This contrasts with Norwegian, where the verb precedes the object in embedded clauses but generally follows negation, shown in (6b).

- (5) a. Wir *lesen* jeden Abend isländische Sagas
 we read every night Icelandic sagas
 ‘We read Icelandic sagas every night.’
 b. Vi *les* **ikkje** islandske sagaer
 we read not Icelandic sagas
 ‘We don’t read Icelandic sagas.’
- (6) a. Der Lehrer weiß, dass wir jeden Abend isländische Sagas *lesen*
 the teacher knows that we every night Icelandic sagas read
 ‘The teacher knows that we read Icelandic sagas every night.’
 b. Læraren veit at vi **ikkje** *les* islandske sagaer
 teacher.DEF knows that we not read Icelandic sagas
 ‘The teacher knows that we don’t read Icelandic sagas.’

German also contrasts with Norwegian with regard to the amount of (unambiguous) evidence children encounter for verb placement in embedded clauses. German children receive evidence of the verb-final word order in embedded clauses from most embedded clauses consisting of more than a subject and a verb. Norwegian children, on the other hand, need the presence of negation (or an adverb) to know whether the verb should move or not. In studies of German children’s production, the children are found to place the verb in final position in embedded clauses as soon as they start producing such clauses (e.g. Clahsen and Smolka, 1985). In contrast, Scandinavian children are found to struggle with embedded verb placement for an extended period (as will be shown below, and as confirmed in Paper 2).

Whether children have verb movement in embedded clauses or not (V-Neg or Neg-V) has been the topic of studies in several Scandinavian languages. Here, I will disregard a study of Faroese children’s production (Heycock et al., 2013), since Faroese is thought to be in transition currently from an Icelandic-type grammar (generalized V-to-T movement in embedded clauses; see Section 2.2.1) to a Mainland Scandinavian-type grammar, and therefore may differ from Mainland Scandinavian in crucial ways. Swedish children have been studied by means of corpus investigations (Håkansson and Dooley Collberg 1994; Waldmann 2008, 2014; the former also contains a small experiment). These studies both find that children produce V-Neg (Håkansson and Dooley Collberg, 1994) and V-

Adv (including V-Neg) (Waldmann, 2008, 2014) in embedded clauses in addition to the canonical Neg/Adv-V. This is illustrated for V-Neg in example (7a) and Neg-V in example (7b) (both from Waldmann, 2008, 222, my translation), in *that*-clauses, uttered by children aged 3;7 and 2;9 respectively. Waldmann (2008, 2014) concludes that children produce V-Adv more frequently than adults.

- (7) a. då går den av fatt d *kan inte* ta på den igen
 then goes it off because you can not take on it again
 ‘Then it goes off because you cannot put it on again.’
 b. ja tycker denne boke *inte e* mutsie
 I think this book.DEF not is dirty
 ‘I think (that) this book is not dirty.’

Unfortunately, the study by Håkansson and Dooley Collberg (1994) does not specify in which types of embedded clauses children produce V-Neg, and since some contexts allow V-Neg in the adult language, children’s production may be perfectly adult-like. Waldmann (2008, 2014) plots productions according to their complementizer type, distinguishing different variants of *att* ‘that’, which include both complement and adverbial clauses. These are clause types argued to allow V-Neg/Adv both in Swedish and Norwegian (see Chapter 2 and Paper 1 for Norwegian). However, some *that*-clauses disallow V-Neg (following e.g. an embedding predicate type, as discussed in Section 2.2.1), and it is not specified whether the children illicitly produce V-Adv in *that*-clauses. An additional finding from Swedish children’s production is that they in some cases produce the V-Adv order (N=10/21) in embedded clauses though it is disallowed in the target language (Waldmann, 2008, 2014). This is illustrated with V-Neg in a relative clause in (8) (from Waldmann, 2008, 222, my translation), uttered by a child aged 2;4.

- (8) De bara pojken som *kan inte* simma
 it just boy.DEF who can not swim
 ‘It’s just the boy who can’t swim.’

Norwegian children have been studied through a corpus investigation and a small experiment with two participants in Westergaard and Bentzen (2007). In these studies, children are also reported to use V-Neg occasionally in addition to Neg-V. A few of these occurrences are in relative clauses, where V-Neg is unacceptable in adult language, and one experimental participant uses V-Neg in embedded *wh*-questions (also not acceptable in the adult language). This is illustrated in (9), from Westergaard and Bentzen (2007, 285)

- (9) huske du koffer dama *ville ikke* kjøpe en nattpotte?
 remember you why lady.DEF wanted not buy a night.pot
 ‘Do you remember why the lady didn’t want to buy a chamber pot?’

These studies of Scandinavian children's verb placement in embedded clauses show a pattern of children somewhat overusing V-Adv/Neg. However, more research is needed to establish more clearly how commonly it is overused, whether children are sensitive to the appropriate licensing conditions of its use, and whether children are sensitive to both environments that disallow V-Neg for syntactic reasons and those that disallow it for semantic/pragmatic reasons. A study addressing these questions is undertaken in Paper 2, with a systematic collection of a larger data set. The experimental methodology of the study is presented in Chapter 4 and the results and further details of the paper are the topic of Chapter 5.

3.2.2 Acquisition of subject placement

Chapter 2 showed that both main and embedded clauses in Norwegian allow the subject to be placed in two positions, a high and a low position relative to negation, illustrated in (10) and (11) (repeated from Section 2.2.2). There, DP subjects were shown to mainly occupy the low position in main clauses, and less so in embedded clauses. In both clause types pronominal subjects were used mostly in the high position. This distribution was said to typically be linked to new (low) and given (high) information.

- (10) a. I går spelte **ikkje** musikklæraren xylofon
 Yesterday played not musicteacher.DEF xylophone
 'Yesterday the music teacher didn't play the xylophone'
- b. I går spelte han **ikkje** xylofon
 Yesterday played he not xylophone
 'Yesterday he didn't play the xylophone'
- (11) a. Olav sa [at **ikkje** musikklæraren spelte xylofon i går]
 Olav said that not musicteacher.DEF played xylophone yesterday
 'Olav said that the music teacher didn't play the xylophone yesterday'
- b. Olav sa [at han **ikkje** spelte xylofon i går]
 Olav said that han not played xylophone yesterday
 'Olav said that he didn't play the xylophone yesterday'

There is extremely little data on children's production of subjects in embedded clauses, and therefore I will first review what we know about child production of subjects in main clauses as well as object placement. For Norwegian, acquisition of subject placement in main clauses is studied by Anderssen and Westergaard (2010); Anderssen et al. (2010); Westergaard (2008, 2011) (with three of these studies examining the same dataset, a corpus from Anderssen 2006). These studies find that, similar to adults, children always place DPs in the low position. This is illustrated by the utterance in (12a), uttered by a child aged 2;2 (from Anderssen et al., 2010, 251). In contrast, they place pronominal subjects in the high position, but not consistently: Children place pronominal subjects in the low position more than adults. Children's high placement of a pronominal subject

is illustrated in (12b), uttered by a child aged 2;8, and low placement of a pronominal subject is shown in (12c), uttered by a child aged 2;5 (both from Anderssen et al., 2010, 252). Both the corpus data and the experimental data in Anderssen et al. (2010) show that between age 2;6 and 3;0 children's production of subjects in main clauses is adult-like.

- (12) a. der snakke **ikkje** mannen
 there speaks not man.DEF
 'There the man doesn't speak'
- b. korfor ser æ **ikke** skoan?
 why see I not shoes.DEF
 'Why don't I see the shoes?'
- c. har **ikkje** han fota her?
 has not he feet here?
 'Doesn't he have feet here?'

A similar type of variation is found with objects (which, since they are also arguments, are likely relevant for subjects): Norwegian, like several other languages, displays two object positions. In Norwegian, pronominal objects typically occur in the position preceding negation, as shown in (13a), whereas full DPs follow negation, as shown in (13b) (Anderssen et al., 2010). This distribution is similar to that of subjects relative to negation, with the exception that DP objects are required to follow negation and DP subjects can optionally move across it (see Anderssen et al., 2010, 241-242).

- (13) a. Jon leste den **ikke**
 Jon read it not
 'Jon didn't read it'
- b. Jon leste **ikke** boka
 Jon read not book.DEF
 'Jon didn't read the book'

Children's production and acquisition of this object alternation is the topic of a number of acquisition studies cross-linguistically. These studies show the same pattern as with subjects in main clauses: Children prefer the low position, i.e. the object following negation, to a larger extent than adults (Anderssen et al. 2010 for Norwegian; Mykhaylyk and Ko 2010 for Ukrainian; Schaeffer 2000 for Dutch). Low placement of a pronominal object is shown in (14), where the target form would have the pronominal object precede negation (example from Anderssen et al., 2010, 255, child aged 2;5).

- (14) åh æ klare **ikke** det
 oh I manage not it
 'Oh, I can't do it'

Although the findings concerning children's subject (and object) placement in main clauses all seem to be in agreement, two issues raise questions about whether children might also overuse the low subject position in embedded clauses. As mentioned above, studies of children's production of this variation are few, and consist of very small numbers of occurrences. Anderssen and Westergaard (2010) and Westergaard (2011), examining the corpus data from Anderssen (2006), find that children use the two subject positions to an equal extent. Additionally, children do not seem to distinguish between subject types, as pronominal and DP subjects are distributed equally across the two positions. However, there are only 24 occurrences of subject placement in total. This calls into question whether children's production in embedded clauses actually deviates from that in main clauses, or whether this distribution is an effect of the low number of data points. It is not unlikely that children would have less of a preference for the low position in embedded clauses than in main clauses: In embedded clauses, low subjects are very infrequent since they are not accepted in all clause types (see Section 2.2.2), and in those clause types that do allow both positions, the low position is much less frequently used. The overwhelming amount of evidence for the high subject position may cause children to use it preferentially. An experimental investigation of this matter is carried out in Paper 3.

3.3 Chapter summary

In summary, this chapter has addressed how word order variation in embedded clauses in Norwegian can enlighten interesting aspects of language acquisition. Studying how children acquire this variation can inform us about whether they learn large, default rules of their target grammar before moving on to exceptions, or whether they learn small, contextual rules from the beginning. Furthermore, it can reveal whether children assume that word order in simple contexts can be transferred to complex environments, particularly at early stages. Moreover, studies on the acquisition of variation can be informative about frequency effects, such as lower frequency bounds of certain structures.

The review of previous studies of verb and subject acquisition showed that, although it seems children have early knowledge of the possible word orders, this knowledge might not be adult-like. For both subjects and objects, children have a preference for placing these arguments following negation, i.e. in a low position, to a larger extent than adults. In particular, this is the case for pronouns, which adults prefer, or mostly accept, in the position preceding negation – children nevertheless prefer pronouns following negation. Additionally, children have a tendency to move the verb across negation in embedded clauses, even though this is often (but not always) a dispreferred option in adult language. Although there are studies on Scandinavian children's production of word order indicating a general pattern, more extensive and systematic investigations are needed to obtain a more comprehensive picture of how children acquire variation. The next chapter addresses and discusses the methods used to collect data from child (and adult) language for these purposes.

Chapter 4

Methodology

The aim of the studies in this dissertation is to gain knowledge about the external aspects of language acquisition, viz. the input children receive and their linguistic behavior, with the ultimate goal of generating new insights into the rules and hypotheses they make during language acquisition, as well as to shed light on what they perceive in their input (as illustrated by Figure 3.1 in Chapter 3). The previous chapters outlined how word order variation is a particularly promising area to study for these purposes. The empirical goal of the present work is to give a detailed outline of three possible word orders in embedded clauses in Norwegian (Neg-V, V-Neg and Neg-S), both in adult and child language. Achieving this goal, for which we need clear generalizations about the relevant word orders, necessitates the following data:¹

1. A complete overview of clause types where embedded V-Neg is and is not used, or acceptable, in the adult language.
2. An understanding of the use of Neg-S with different subject types in the adult language.
3. A systematic investigation of children's word order production in embedded clauses with negation, enabling us to investigate whether children are aware of the licensing conditions for the embedded clause word order variation in the adult language.

To understand word order patterns in the adult language, estimates of adult production preferences were collected using two methods: corpus searches (Papers 1 and 3) and elicitation tasks (Papers 2 and 3), in which adults were control participants. Additionally, adult intuitions have been consulted through an acceptability judgement task (initially included in Paper 2 but removed from the final version). Child production was assessed

¹Chapter 2 presented existing studies of both embedded V-Neg and subject placement relative to negation, and pointed out that the data these studies provide should be added to/expanded in a way that allows us to investigate unskewed production data from adults as well as more systematic production data from larger samples of children. This is the purpose of the data listed above.

via elicitation tasks.² Table 4.1 gives an overview of the methods for data collection used in each paper.

Method	Structure (Neg-V vs.)	Paper 1	Paper 2	Paper 3
Corpus data	V-Neg	✓		
	Neg-S			✓
Acceptability Judgement	V-Neg		✓	
Elicitation tasks				
Relative clause task	V-Neg		✓	
<i>that</i> -clause task	V-Neg (<i>Variable: Clause type</i>)		✓	
	Neg-S (<i>Variable: Subject type</i>)			✓

Table 4.1: An overview of the methodologies used in the three papers of the thesis.

In this chapter I will discuss the methodological considerations related to *i*) the collection of adult language data and *ii*) the collection of child language data. I will also discuss the considerations related to the choice of each separate method as well as the combination of methods. Collection of data from adults is the topic of the second subsection in this chapter, and the third subsection concerns collection of data from children. Before addressing these topics, I will discuss ethical aspects of the experimental tasks carried out in this thesis. This involves both how the studies comply with Norwegian rules and regulations for research involving human subjects and data storage, and also specific measures taken when working with children.

4.1 Ethical considerations

As research involving human subjects, the studies carried out in this thesis adhere to the ethical rules and regulations of such research in Norway (NESH, 2016). All investigations involving unanonymized data (i.e. the elicitation tasks in Papers 2 and 3) have

²In fact, a detailed comprehension task was designed and piloted with children, as a collaboration project with Professor Kristine Bentzen at UiT, The Arctic University. In this task we investigated whether *wh*-extraction from embedded clauses was affected by the V-Neg word order, as an effect of the hypothesized underlying syntactic structure. We did so by studying children's replies to ambiguous questions of the type 'When did the boy say *_*that he couldn't find his ball *_*?' and seeing if their replies varied when we changed the word order. The experimental design was based on those used in de Villiers et al. (1990) and Omaki et al. (2014). However, even after two pilot experiments the task did not return any clear results, and therefore did not justify carrying out a larger-scale study.

been approved by the Norwegian Centre for Research Data (NSD) after a thorough application process. The approval is published in a public database (<http://pvo.nsd.no/prosjekt> project number 48890), as well as added in Appendix C. The information and consent forms obligatorily given to adult participants and parents/caretakers of the child participants were developed through collaboration with the NSD (see Appendix A and Appendix B).

It is important that participants never feel pressured to take part in a research study, that they receive sufficient information about the study, and that they give their signed consent to participate. Adult participants were recruited through putting up posters asking for participants. They received an information sheet and signed a consent form, in addition to providing basic demographic information (name, age, contact information, gender and dialectal background). To comply with the Norwegian privacy policy, child participants were recruited in the following way: Children would be tested at their school or kindergarten, so these institutions were contacted and asked to participate. Such institutions are not allowed to release information about their pupils to external parties, such as a researcher, so the interested parties distributed information about the research project to children's parents. Parents who approved their child's participation returned signed consent forms and background information (contact information, name, age, gender and dialectal background of both child and parents). All participants received information on their right to withdraw from the study at any point, in accordance with NESH (2016) (item 8).

Using children as participants in research requires specific ethical considerations. Many of the children in the present studies are so young that they cannot be directly asked for consent to participate. Since all data are anonymized, the pertinent aspect of this question is not whether the child understands and approves supplying data material for a research project, but how one can be sure the child is comfortable with taking part in the test situation. To comply with standards for ethical research involving children (as described by e.g. Alderson and Morrow 2011 and by the present project's NSD approval), two main measures were taken. First, the situation was made comfortable and secure for the children. This was done in two ways: *i*) the researcher spent some time in the kindergarten/school, getting to know the children (and adults) (as recommended by Blume and Lust 2017, 43f), and *ii*) the experimental task was designed in an age-appropriate manner (complying with NESH 2016, item 14). The task was developed to be encouraging and fun for children (with stories suited for the age group, use of pictures and a computer), and it was always presented as a game, or 'language game', even to the kindergarten and school staff as well as parents. The second measure was taking the children's consent seriously: participation is always voluntary for the child, even if parents/caretakers have approved the child's participation. Therefore, children were always asked whether they wanted to join the researcher for a 'game' in a separate room in their kindergarten/school. If a child said no, they were not in any way pressured to participate. Additionally, if a participant seemed uncomfortable during the test session, they were given the option of ending the 'game' to join their friends. Children were always thanked properly at the end of the test

situation.

Collecting personal information as described above, in combination with making audio recordings of participants, requires a solid plan for secure storage of information. This was part of the application to the NSD. All data, recordings and personal information were stored in a password-protected database on a server provided by the Norwegian University of Science and Technology. The personal information and recordings were stored separately from each other, and were connected by a participant ID, where each participant was assigned a specific code. The overview of participant codes was also stored in a separate location. At the point of project finalization, the personal information (i.e. the personally identifiable data) will be deleted so that the collected data can be used further but not in any way connected to an individual.

4.2 Collecting adult language data

Obtaining the data listed at the beginning of this chapter is challenging for several reasons. In this section I will address challenges pertaining to collecting adult language data. As in any study within the framework of generative grammar, the goal in this dissertation is essentially coming closer to an understanding of the underlying system of rules in a speaker's grammar, i.e. competence, or I-language (Chomsky, 1965, 1986), through its externalised manifestations (performance, E-language). It is crucial that our generalizations about the external manifestations of a language are as accurate as possible: A flawed correspondence between our 'proposition describing how things work in the world and how they really work' (Maxwell and Delaney, 2004, 23) means the validity of our claims is compromised. Such an issue can arise when speakers change their linguistic behaviour. This is known to happen when adults are observed (Labov 1972's 'observer's paradox'): In a test situation adults adhere more to prescriptive rules, using what they believe to be the 'correct grammar' (see e.g. Cornips and Poletto 2005, 943; Hårstad et al. 2017, 147).

Such considerations are relevant when attempting to figure out when and where adults use variations like embedded V-Neg or Neg-S. V-Neg and Neg-S can be seen as 'non-standard' word orders in embedded contexts, as the canonical Neg-V order is described as 'the embedded clause word order' in school grammars and teaching material.³ Therefore,

³Literature for primary school teacher students (Iversen et al., 2011; Aa, 2017) show Neg-V as the only possible word order in embedded clauses containing negation in Norwegian. Iversen et al. (2011) even explicitly point out that embedded V-Neg is ungrammatical, and Aa (2017) shows that embedded clauses can be separated from main clauses by the relative positioning of the verb and negation (Neg-V in the former and V-Neg in the latter). The latter point is also made on the educational website norsksidene.no which is used by children in primary and high school: An example is an explicit statement that the reader should 'Notice that the adverbial's position changes from main clause to embedded clause' (*Legg merke til at adverbialet 'ikke' bytter plass fra helsetning til leddsetning*) in the main clause *Jeg har ikke kjøpt epler* 'I have not bought apples', and the embedded clause *At jeg ikke har kjøpt epler* 'That I have not bought apples' (<https://norsksidene.no/web/PageND.aspx?id=99870> [Accessed 27 April 2020]). Notably, norsksidene.no also gives the Neg-S order as a possibility for embedded clauses: *At ikke jeg har kjøpt*

in accordance with the observer's paradox, a likely scenario is that adults may use only the canonical Neg-V word order in a test situation, even though the three variations are possible in their grammars.

To overcome the obstacle of adults' prescriptivism and tendency to change linguistic behaviour, the present studies use method triangulation, combining several methods to obtain the data listed in points 1 and 2 above, repeated here for convenience:

1. A complete overview of clause types where embedded V-Neg is and is not used, or acceptable, in the adult language
2. The use of Neg-S relative to different subject types in the adult language⁴

For production of embedded V-Neg in Paper 1 and Neg-S in Paper 3, speech corpora were used. For Paper 2, an acceptability task was carried out to consult adult intuitions about embedded V-Neg. Adults also took part as control participants in the elicitation tasks designed for children. These tasks will be discussed in Section 4.4.2. Using these methods means different datasets are collected and studied; the situations differ and so do the participants. Moreover, the methods employed have the presence of an 'observer' to a varying extent. Together this will yield confidence in the adult generalizations, as well as a solid foundation for the elicitation task design. This chapter discusses the benefits and drawbacks of each of the methods employed, starting with the corpus investigations, continuing with the acceptability judgement task and ending with the elicitation tasks.

4.2.1 Corpus investigations

As was discussed in Chapter 2, and is made clear in Papers 1 and 2, the embedded word order variation Neg-V, V-Neg and Neg-S is empirically understudied. Therefore, the purpose of the investigation into adult production of these variations was to gain insights into their occurrence in spontaneous speech. This was done through investigations of spoken language corpora. A corpus is a 'collection of language data used for linguistic study' (Schütze, 2011, 208) often processed in some way (e.g. transcribed) and made available for research. Working with corpora, i.e. corpus linguistics, is referred to as a 'distributional discipline' (Gries and Newman, 2013, 274) where one can find answers to 'how often and where' something occurs as well as how linguistic elements are 'used in their actual contexts' (ibid.). This makes investigations of spoken language corpora an ideal method for studying the adult production of this word order variation, an empirical goal of this dissertation that is distributional in nature.⁵ Additionally, studying

epler.

⁴Studying subject placement relative to negation is only done in complement ('that'-) clauses. This is done to achieve smaller but clearer generalizations with less chance of confounding factors: This word order possibility certainly should be studied further, and since we don't know the extent to which clause type might be a relevant factor of this word order, data here are narrowed down to one clause type. This makes it easy to compare with data in future studies.

⁵Only corpora containing speech were examined, meaning that written corpora were not considered. The extent to which the word order variation of interest is possible in written language is not known,

naturalistic speech data is the best way of minimizing the role of the observer (as discussed above) and gaining as ecologically valid productions as possible, i.e. productions representative of ‘real world’ linguistic behaviour (see e.g. Eisenbeiss, 2010; Egbert and Baker, 2019). If stigmatized or non-standard word orders are less likely in tasks with a clear observer, we are more likely to get a better reflection of the full range of people’s productions from corpora.

One drawback of using data from spontaneous speech is that one might not find specific structures in the speech sample. The absence of a structure can be interpreted in several ways: The pragmatic context in the speech situation might not have motivated its production (Lust, 2006, 133), it might be too infrequent to be captured in the sample or it might be ungrammatical/unfelicitous (Schütze, 2011). To overcome this drawback, the present studies use a large speech sample: five (Paper 1) and three (Paper 3) corpora comprising different speakers of different dialects and ages, with recordings made in different situations. The amount of data collected increases the likelihood of a representative sample of adult speech patterns.

The use of corpus data was made possible by the availability of large corpora of adult speech in Norwegian (at ‘Textlab’, University of Oslo⁶), namely the Norwegian speech corpus (*Norsk talespråkskorpus*, NoTa; Tekstlab 2004), The Big Brother corpus (Tekstlab, 2009) and Scandinavian Dialect Syntax (ScanDiaSyn; Johannessen et al. 2009). Additionally, adult speech was drawn from two child corpora in the CHILDES database:⁷ the Simonsen corpus (Simonsen, 1990) and the Ringstad corpus (Ringstad [Larsen], 2014).⁸

The speech samples in these corpora were made in different ways. The Big Brother corpus consists of transcriptions of the participants on the ‘Big Brother’ TV show, in which 10 participants stayed in a house continuously monitored by cameras. The participants had different dialects, although the largest portion of them were from the greater Oslo area.⁹ In the NoTa and ScanDiaSyn corpora, participants were recorded for a short time (approximately 30 minutes) while having a conversation (Johannessen et al., 2014). The conversations in ScanDiaSyn take place between two speakers with the same dialect, and dialects from the whole country are represented. The NoTa corpus is a collection

and thus to get clear and clean generalizations, the present studies only investigate this as a spoken phenomenon (see e.g. Johannessen 2008 and Raso and Mello 2014 for the importance of considering spoken data as opposed to written).

⁶<https://www.hf.uio.no/iln/om/organisasjon/tekstlab/>

⁷<https://childes.talkbank.org/>

⁸In the initial phases of working on this dissertation, the Simonsen corpus was available in the CHILDES database. However, during the finishing stages of my work, this corpus was no longer to be found in the database.

⁹The Big Brother corpus is in fact the only corpus of the five used here in which participants were not aware that their speech would be used for linguistic purposes (since transcribing this TV show for such purposes happened after it was recorded). Additionally, because participants were recorded 24 hours a day in a variety of situations, it is highly unlikely that they would change their linguistic behaviour substantially, especially in a prescriptive manner relevant for the constructions under scrutiny here. This makes it an ideal testing ground for grammatical constructions such as embedded clause word order.

of the Oslo dialect with recordings made in a similar fashion to those from ScanDiaSyn. Recordings in the two CHILDES corpora were made in everyday-situations, in interactions between an adult and a child. The majority of these recordings feature one of four adults, representing three different dialects.

Refining searches

The purpose of the corpus investigations in Paper 1 was to elucidate the full distribution of embedded V-Neg. In Paper 3, the corpus data were used to look at the frequency of two subject types (pronoun and full DP) in two subject positions (high or low relative to negation). Two fundamental considerations were made when searching the corpora: *i*) avoiding sampling bias or skewed data, and *ii*) enabling clean generalizations lending themselves to comparison (either between clause types in Norwegian, or cross-linguistic comparisons). Based on these considerations and the purposes of the studies, the following searches were carried out in the corpora:

1. Search for all embedded clauses with the word order Neg-V
2. Search for all embedded clauses with the word order V-Neg
3. Search for all complement clauses (with the complementizer ‘that’) with negation directly following the complementizer¹⁰, and
4. Making a subset of the data in item 1, including only complement clauses with the S-Neg-V order, to compare with the data retrieved from the search in item 3

None of the corpora were parsed, but the corpora available from Textlab were tagged for part of speech (POS). Thus, the Textlab corpora enabled linear searches for lexical items and/or POS tags. When searching through the three corpora hosted by Textlab, the search strings used were: 1) complementizer + pronoun/noun + *ikke* ‘not’ + verb, 2) complementizer + pronoun/noun + verb + *ikke* ‘not’, and 3) *at* ‘that’ + *ikke* ‘not’ + pronoun/noun. In all cases a maximum of 0 intervening elements was specified. The CHILDES corpora were not parsed or tagged. The two child corpora were therefore searched manually using the CLAN programme provided by CHILDES. To make searches comparable, in the child corpora I searched for all embedded clause types returned by search strings 1) and 2) in the Textlab corpora. I then extracted all the embedded clauses containing negation that matched the relevant features from the Textlab search.

The data retrieved from searches 1 and 2 (Neg-V and V-Neg) was categorized according to complementizer/clause type to fulfil consideration *ii*). For each utterance in all datasets, information was stored on the immediate left and right contexts for the word

¹⁰We are still at the beginning of studying the function and rules involved in the Neg-S word order. It is not clear if e.g. clause type is a relevant factor of the licensing of this word order. For the sake of avoiding potential confounds such as clause type, I chose to only search for embedded clauses with the complementizer at ‘that’ when studying this word order.

Word order	Matrix predicate	Complementizer	Degree clause	Embedded verb	Embedded verb type	Subject	Left context	Word order	Right context	Corpus
negv	lest	at		har	A	Pron	at de mener at det har jeg lest	at jeg ikke har	fått det med meg	BigBrother
vneg	si	for det at		kan	A	Pron	det jeg skulle si da for det	at du kan ikke	styre hva jeg sier eller ikke sier	BigBrother
vneg	smaker så vondt	at		1 skjønner	M	Pron	det syns jeg smaker så vondt	at jeg skjønner ikke	at noen bruker det krydderet	NoTa

Figure 4.1: *The data retrieved from the corpus searches was stored and categorized as shown in this figure (the exact categories for each dataset are described in the text).*

order. Since the study in Paper 1 (dataset on points 1 and 2 above) was concerned with determining the types of clauses in which V-Neg is found and identifying certain characteristics of those clauses, utterances were also coded for the following features: matrix predicate, embedded verb (token and type of main verb, auxiliary and copula), subject type (pronoun or DP), which corpus the utterance was drawn from, and whether the clause was: i) a complement clause, or ii) an adverbial clause. Adverbial clauses of the type ‘so that’ were categorized as purpose or consequence clauses. Declarative clauses were marked as being a consequence of degree-clause or not, and if the embedding predicate was negated, it was coded. Clauses embedded under a copular verb were subjected to a more fine-grained categorization according to their subject type (different kinds of *det* ‘it’ – cataphoric, expletive, referential *det*, pronouns). This was all to enable the appropriate analysis of the alternation Neg-V/V-Neg, and where each of the word orders were typically found.

Since the study in Paper 3 (datasets on 3 and 4 above, Neg-S and S-Neg-V) was concerned with determining the subject type used in Neg-S, as well as certain characteristics of the clauses in which the word order was found, utterances were coded for matrix predicate, complementizer (*at* ‘that’ + varieties including *at*), subject type (pronoun or DP), and which corpus the utterance was drawn from. An example of the organization of the data is shown in Figure 4.1.

4.3 Acceptability judgements

As mentioned in the introduction of this chapter, systematic child production data are required to answer the larger research questions posed in this thesis (Chapter 1). Paper 1 shows the general distribution of embedded V-Neg in adult spontaneous speech, including clause types where it is frequently used and clause types where it never appears. Paper 2 revolves around an elicitation task to study children’s language production. Based on data from Paper 1 as well as knowledge from previous literature, we made hypotheses about the acceptability/unacceptability of V-Neg in certain contexts in which we wanted to study children’s production. However, it was crucial to know with more certainty how adults perceived this word order’s acceptability in the same contexts, to make sure we had an appropriate comparison for analysing children’s production. We wished to know whether the observed absence of V-Neg in RCs (found in Paper 1) reflected that they were unacceptable/ungrammatical or simply infrequent. To know with more certainty how adults perceived the acceptability of this word order in certain contexts, we con-

sulted their intuitions through an acceptability judgement study.¹¹

Acceptability judgments have been used to establish an empirical foundation for the (un)acceptability of certain structures or phenomena (Sprouse and Almeida 2012, 210; Schütze and Sprouse 2013, 28).¹² Such a judgement involves the speaker reporting their spontaneous reactions to linguistic stimuli (*ibid.*). Asking specifically about the (un)acceptability of syntactic features may provide insight into speakers' competence that is not attainable through spontaneous speech data, given that absence of a specific feature in spontaneous speech does not confirm its unacceptability. Thus, acceptability judgements can complement and confirm corpus data.

Often, acceptability judgements have been carried out informally, meaning by the researcher introspecting or consulting a few others, rather than through a formal experiment. This has caused the method to receive much critique (see e.g. Sprouse and Almeida, 2012, 610). Furthermore, data collection through acceptability judgements has been criticized on the grounds that it is unreliable: 'Different people give different judgements and even the judgements of an individual may vary on different occasions' (Featherston, 2008, 2). Another issue related to the use of acceptability judgements is 'what judgements are judgements of' (Featherston, 2008, 4). When asking speakers for their intuitions about some string, this intuition may be influenced by factors such as specific lexical items, word length, plausibility or the test situation (Featherston 2008, 5; Schütze 2011, 211f). In the following I will explicate our task design while pointing out the measures we took to overcome these issues.

4.3.1 Task design

In our study, we chose to use a formal design allowing controlled judgements and statistical analysis. This way we could investigate judgements on a group level, increasing the reliability of the judgements. We designed an acceptability judgement task to test how participants would judge the V-Neg and Neg-V word orders in three different types of embedded clauses (all containing negation): *i*) relative clauses, shown in (1a), where V-Neg was assumed to be disallowed; *ii*) complement clauses with a factive embedding environment (such as *lei seg for* 'sad that'), where V-Neg was assumed to be disallowed; and *iii*) complement clauses with an assertive embedding environment (such as *si* 'say'), where V-Neg was assumed to be permitted. Types *ii* and *iii* are shown in (1b) and (1c), respectively.

¹¹Adults are also used as control participants, i.e. 'baseline' production, in the elicitation task designed for children. However, since we suspected adults might only use the canonical order Neg-V in such a test situation, acceptability judgements were used to probe into adults' grammatical knowledge from a different perspective.

¹²Acceptability judgements have typically been referred to as 'grammaticality judgements', but there has been a shift in terminology. This shift is related to the acknowledgement that a grammar is 'a mental construct not accessible to conscious awareness' (Schütze, 2011, 208), such that speakers can only judge whether a string sounds acceptable to them, not its grammaticality status.

In addition to the experimental factor of embedding environment/clause type, the two experimental factors *embedded verb position* and *embedded verb type* were included. The former had two levels, Neg-V and V-Neg, varying whether the verb followed or preceded negation. All items shown in (1) therefore had an identical counterpart with the V-Neg word order. The last experimental factor manipulated whether the embedded verb was a main verb or an auxiliary. Consequently, the experimental items differed as an effect of three experimental factors, in a 2 x 2 x 3 factorial design. The items were distributed according to a Latin Square, meaning that each participant would only see one condition per item, and that the item-condition pairings were counter-balanced across lists. In doing so, we increased the certainty that our judgement data would produce generalization over the relevant structure (see e.g. Featherston, 2008, 5), not based on lexical items.

- (1) a. Lars så deltakerne som **ikke måtte** lage bål alene.
 Lars saw participants.DEF who not must make fire alone
 ‘Lars saw the participants who didn’t have to make a fire alone’
- b. Lars er lei seg for at deltakerne **ikke lager** bål alene.
 Lars is sad REFL for that participants.DEF not make fire alone
 ‘Lars is sad that the participants don’t make a fire alone’
- c. Lars sier at deltakerne **ikke må** lage bål alene.
 Lars says that participants.DEF not must make fire alone
 ‘Lars says that the participants don’t have to make a fire alone’

The acceptability task comprised a total of 24 experimental items, i.e. sentences that participants were to judge, and 41 participants (adult monolingual speakers of Norwegian) completed the task. The number of items and participants should be sufficient to get clear group-level patterns, and is well above the minimum number of 20 participants advised by Featherston (2007, 283) and Schütze (2011, 213). Preventing participants’ awareness of the test structures is important, as such an awareness can cause conscious response strategies (Schütze and Sprouse, 2013, 39). Therefore, to take the participants’ focus away from the structures being tested, we included 60 filler items (from an unrelated study). The filler items included 30 acceptable and 30 not acceptable sentences. Participants were anonymous, and only gave information about their age and language background. In the task we asked for relative judgements, using a numerical scale (Likert scale) from 1 to 7, where ‘1’ corresponded to ‘does not sound natural’, and ‘7’ corresponded to ‘very natural’. This increased the chance of participants not simply rating V-Neg as unacceptable, but rather gave participants the ability to see and express relative differences in acceptability.

As previously discussed in this chapter, adults can behave prescriptively in test situations, which in the case of this word order variation means only using or accepting the Neg-V word order. However, several aspects of this test reduced the risk of this happening. We wanted to consult intuitions on this word order variation in spoken language, and therefore, when participants were presented with the judgement scale, they were

asked to consider whether it would sound natural or not to them if someone speaking their dialect uttered ‘the following’. A (common) alternative when presenting such judgement scales is asking participants whether an utterance sounds acceptable or unacceptable. Additionally, we wrote the test items using the written standard *bokmål*, not the other option, *nynorsk*, since bokmål is by far the most common written standard in the area we targeted (Trøndelag). Using nynorsk could therefore potentially take the focus away from the task, in addition to it often being perceived as a more literary form. Furthermore, the task was performed online (made using a script on the experimental platform IBEX farms; Drummond 2011), without the presence of a researcher. Undertaking the task in the absence of a researcher may have given participants less of a feeling of being observed and being tested.

4.3.2 Analysis

To analyse judgement responses, we first z-scored individual participant ratings. We then subjected participant ratings to a linear mixed-effects model using R. Fixed effects included embedded verb type, embedded verb position and embedding environment. For the latter we used Helmert coding, enabling us to make comparisons first between assertive *that*-clauses and the two other clause types taken together, and next between factive *that*-clauses and relative clauses. Random intercepts were included for participant and item.

4.3.3 Results

To conclude I will summarize the results. Overall, participants rated sentences with Neg-V as more acceptable than those with V-Neg. As for the V-Neg sentences, these were rated as we expected. The V-Neg order was significantly more acceptable under assertive environments than factive and relative clauses ($p = 0.001$). In factive and relative clauses, the V-Neg word order was generally less acceptable. Furthermore, the V-Neg order was judged as more acceptable when the finite verb was an auxiliary than a main verb ($p = 0.045$).

4.4 Collecting child language data

Getting a representative sample of children’s language in use is equally important as for adults. After all, the goal in both cases is getting access to their I-language, or the system of rules in their mind. Again, we want the link we make between the manifestation of grammatical rules and the I-language to be valid. In Section 4.2 I described how adults might change their linguistic behaviour when studied, potentially causing us to draw mistaken conclusions about their I-language. Accessing children’s mental representations of a grammar is also challenging, but for different reasons than those described for adults. For the present studies, this has to do with the accessibility of children’s language production. Since children know and use fewer words and structures than adults, a fundamental question is how best to access their language production in a way that

gives an adequate and accurate representation of what they are able to produce at any given point.

Perhaps the least intrusive way of collecting children's language production is by recording their spontaneous speech, transcribing and collecting it in a corpus that can be searched for relevant structures. Since this type of data shows the child's language in use in a natural context, it is said to have high ecological validity (Eisenbeiss, 2010). However, spontaneous speech does not guarantee a representative sample of a child's language, or implicit knowledge. In fact, a study investigating children's production of complement clauses by comparing samples of spontaneous speech to a production task (i.e. tasks developed to prompt participants to produce a specific construction) found that children produce significantly more complement clauses in the tasks than in the samples of spontaneous speech. This warrants the conclusion that using production tasks provides 'greater opportunities for children to produce complement clauses and consequently yield more data on which to base descriptions of children's capabilities' (Steel et al., 2013, 292-293). This is a particularly relevant point to the present studies, in which complement (and other embedded) clauses are also studied.

Another issue with using spontaneous speech is what to conclude from the non-occurrence of certain structures (as discussed in Section 4.2.1 on adult corpus data). The absence of a relevant feature can mean it is ungrammatical, or it can be caused by infrequency or lack of relevant (pragmatic) contexts. From the outline in Chapter 2 of embedded clauses containing negation in adult language, we know that such clauses are rare even in adult speech. It is unlikely they appear more often in children's speech production. Thus, using spontaneous speech from children would not fulfil the empirical goals of point 3 (repeated below for convenience).¹³

3. A systematic investigation of children's word order production in embedded clauses with negation, enabling us to investigate whether children are aware of the licensing conditions for the embedded clause word order variation in the adult language.

To retrieve data as described in 3, the child language studies in Papers 2 and 3 use a production task. Before describing the details of the task, I will discuss the challenges inherent to obtaining a representative language sample from children when using such tasks. When participating in a research situation, children might be shy or reluctant to cooperate, especially with a researcher who is unknown to them (Kristoffersen and Simonsen, 2012, 7-8), or if they feel like they are being tested. Furthermore, due to their young age, children's cognitive abilities constrain the type of tasks they can participate in. If we don't succeed in properly addressing these issues, it can affect both the validity

¹³Additionally, the children in the two existing public child language corpora of Norwegian in the CHILDES database are too young for embedded clauses with negation to appear often, or at all, in their speech: The eight children in the Garmann corpus (Garmann et al., 2019) are aged between 1;0 and 2;0, while the three children in the Ringstad corpus (Ringstad [Larsen] 2014, collected for my master's thesis) are aged between 1;10 and 2;9. Only one example of an embedded clause containing negation is attested in the latter corpus.

and the reliability of our measurements, meaning that we will not get an accurate description of children's abilities, and also that what we do get from children's production will be random and not replicable.

Section 4.1 addressed how we dealt with some of these issues. The key concern was making a safe, comfortable setting for the children through the following measures: The researcher spent some time getting to know them; their decision to join/not join or leave the task was always respected; and the experiment was presented to them as a game, not a test. In Section 4.1 I also mentioned that the task was designed to be age-appropriate. In what follows I will outline the details of the task that was developed, and through this show how it was suitable and engaging for children in the participating age group. I will start by presenting the participants.

4.4.1 Participants

This section will present child participants and the corresponding control participants. The child participants of the study in Papers 2 and 3 were all children living in the city of Trondheim, Norway, acquiring the local dialect of Trondheim/Trøndelag (see Section 2.3 for details). Including only children from the same dialectal area maximizes the uniformity of generalizations we can make based on the collected data.¹⁴

The child participants were aged 3;1-7;3. The study in Paper 3 reports on one task, in which the results of 33 children aged 3;1-6;1 are included. Paper 2 consists of two tasks; 33 children aged 3;1-7;3 participated and gave relevant responses in both tasks.

The age range was carefully selected so it would include children just starting to produce the relevant embedded clauses as well as those approximating the target language. The former relates to the assumption that children might be more prone to non-adult-like production when first starting to include a certain structure in their production. Children are found to start producing embedded clauses around age 2 (see e.g. Diessel, 2004), and are able to participate in production tasks from around age 3. The upper bound of the age range was chosen because findings from previous studies of the embedded clause word order variation suggest that it is acquired late (age 7 or later; Westergaard and Bentzen 2007), and therefore studying this range will likely give a picture of the whole period in which this word order variation develops. Older children were not considered, because with the available time I chose instead to collect data from a larger group of participants within the age range mentioned above.

Both production studies carried out with children included adult control participants. These adults were all from the Trøndelag area, to ensure the dialectal similarity between adults and children. The study in Paper 2 included 15 adult control participants and the study in Paper 3 included 10 adult control participants.

¹⁴The parents of the children were not all from Trondheim, or the larger dialectal area Trøndelag, as making such a restriction would make it impossible to find enough participants.

4.4.2 Elicitation tasks

The purpose of the studies in Papers 2 and 3 was to study children's production of embedded clauses across specific contexts (i.e. with different clause types and subject types). Additionally, these studies should ideally have a robust sample size (meaning a large number of participants and relevant utterances), as well as facilitate manipulating certain variables to look at the word order outcome. To fulfil these purposes, elicitation tasks were the chosen method. These are tasks involving specific prompts to elicit certain structures from a participant (Crain and Thornton, 1998; Eisenbeiss, 2010). Since such tasks are used to probe specific linguistic features, they are ideal for infrequent structures (Crain and Thornton 1998, 141; Eisenbeiss (2010, 27)). Such tasks are appropriate for the age of the children tested in this thesis, as production tasks are typically used from around age 3 (Eisenbeiss, 2010, 27). All elicitation tasks in the present studies were designed as so-called 'shy puppet' tasks (Crain and Thornton, 1998), a choice motivated by three main considerations (a short introduction to such tasks is given in Figure 4.2.). First, the experimental session should be fun for children, and involving a puppet makes the situation more playful and enjoyable for the child. Second, along a similar vein, involving a puppet is more likely to capture the interests and abilities of participants (particularly the youngest ones). Third, a shy puppet task is a felicitous setup for asking the child questions even though the experimenter knows the answer: The puppet has not seen the visual aids or is forgetful, and therefore needs a reminder about something. This makes the child more likely to give a verbal response (Crain and Thornton, 1998, 131).

'Shy puppet'-task

In a 'shy puppet' task (Crain and Thornton, 1998), children are introduced to a hand puppet (managed by an assistant) who is very shy. The puppet will only talk to children, not adults. The children are told that the puppet will follow a story along with them, but that he can be forgetful and therefore wants the child to help him remember the contents of the story by asking them questions. With the puppet present, the experimental situation is transformed into a game, or play-time. Therefore, using a puppet to interact with children typically increases their willingness to take part in the task and decreases their shyness.

Figure 4.2: A description of the task type used for the elicitation studies.

One obstacle one might face in using elicitation tasks is that one can only control what happens on the experimenter's part, and no matter how carefully the eliciting prompts are designed, children might find alternative ways of phrasing their utterance (Crain and Thornton, 1998, 144ff).¹⁵ In these studies the risk of this happening was minimized

¹⁵Children's creativity was witnessed in an elicitation task carried out in collaboration with researcher Natalia Mitrofanova, PhD candidate Bror-Magnus Sviland Strand and professor Marit Westergaard (all at UiT, the Arctic University), and intended to be a part of this dissertation. The task was designed to elicit subject questions containing negation, as shown in (i).

by doing pilot experiments to gauge children's responses. Furthermore, the tasks were carried out with a large number of participants to ensure that even if some children uttered unintended structures, there would nevertheless be enough aggregated relevant data from all children.

Across Papers 2 and 3, three tasks were designed to elicit complement clauses. Both studies had a task to elicit *that*-clauses, and the study in Paper 2 additionally utilized a task to elicit relative clauses. Although the designs of the *that*-clause tasks were similar, the independent variables differed. In Paper 2 we wanted to investigate the possible effect of embedding verb type (assertive or factive) on the word orders V-Neg vs. Neg-V, and in Paper 3 the investigation was of the possible effect of subject type (pronoun or DP) on the word orders Neg-S vs. S-Neg. Thus, the elicitation task in Paper 2 had the independent variable 'embedding verb type' with the two conditions 'assertive' and 'factive', and the task in Paper 3 had the independent variable 'subject type' with the two conditions 'pronoun' and 'DP'. The dependent variables also differed in the sense that each paper investigated two of three word orders. In order to maximize the number of relevant responses, the items in Paper 3 were all embedded under factive matrix verbs, where the V-Neg order is claimed to be disallowed. This would ensure a larger number of Neg-S and S-Neg responses.

***That*-clause tasks**

The *that*-clause tasks had a 'shy puppet' design, as described in Figure 4.2. Each experimental item consisted of a short lead-in story (inspired by those used in Westergaard et al. 2014) of a few sentences that provided a relevant context. The context included well-known characters from Norwegian children's books.

The procedure with lead-in stories and questions is shown in (2) and (3). The example in (2) shows an item where the embedding predicate is factive, i.e. the only type of embedding verb used in Paper 3. In (3) an example is given of an assertive embedding predicate. This type of item was used in Paper 2, in addition to items such as that in (2). After the short story, the puppet asked an eliciting question. All experimental items (untranslated) are included in Appendices D and E.

(2) **Narrator:** Petra is being watched by her babysitter. The babysitter often cooks meat loaf for dinner. Today she does not make meat loaf. Petra is happy about

-
- (i) K  m som **ikke** *leika* sammen?
 who REL not played together?
 'Who didn't play together?'

However, children overwhelmingly phrased their questions using other possible wordings, such as clefted subject questions, subject questions without the relativizer or other options. After several rounds of piloting and making changes to the experimental design it was concluded it was not possible to constrain children's choice of wording to match what we intended to elicit.

that. **Puppet:** What is Petra happy about?

Target answer:

- a. Petra er glad for at barnevakta (**ikkje**) lagar kjøttkake
 Petra is happy for that babysitter.DEF (not) makes meatloaf'
 'Petra is happy that the babysitter isn't making meatloaf'

- (3) **Narrator:** In Karsten's family, everyone knows eating sweets is only allowed on Saturdays. But one Monday, Karsten's mum has a suspicion that he has taken some sweets nevertheless. She asks him if this is the case, and he replies: No, I don't eat sweets on Mondays! **Puppet:** What did Karsten say?

Target answer:

- a. (Karsten seier) at han (**ikkje**) et (**ikkje**) godteri på måndagar
 (Karsten says) that he (not) eats (not) sweets on Mondays
 'Karsten says that he does not eat sweets on Mondays'

The task designs differed with respect to how the lead-in narrative was presented. In Paper 2, the experimenter told the child this story (adhering to a script), whereas in Paper 3, the story was pre-recorded. It was deemed necessary to pre-record the stories in Paper 3 because prosodic stress and contrastiveness are among the factors argued to influence subject placement. Thus it was paramount to ensure that all participants received identical stimuli. The prosody in the voice-over was kept as neutral as possible. In addition, only the standard negation form *ikke* was used in the readings. In Paper 2, the children who participated in the *that*-clause task also participated in a similar relative clause task. The design of the relative clause task was such that pre-recorded stimuli would make the task unnatural. In order for the modes of presentation in both the relative clause task and the *that*-clause task to be as similar as possible, the stories were presented by the experimenter in both tasks in this study. Care was taken also here not to use prosodic stress and only to use the standard negation form *ikke*. To verify that this had been followed through, this was checked specifically when logging the data.

We considered the vocabulary of the children, as advised in Blom and Unsworth (2010, 8), by checking that all embedding verbs were familiar to Norwegian children using the lexical database 'Norwegian Words' (Lind et al., 2015).

Both the *that*-clause experiment and the relative clause experiment in Paper 2 consisted of 16 test items with 6 filler trials evenly distributed across items. The *that*-clause experiment in Paper 3 consisted of 12 experimental items, and this task also included 6 evenly distributed fillers.

Relative clause task

In Paper 2, an elicitation task prompting negated subject relative clauses was utilized. This task was also presented in a shy puppet design, and was similar to the *that*-clause task in that it had a short lead-in story (Based on the ‘Which child would you rather be?’ task of Novogrodsky and Friedmann 2006), and a hand-puppet was present to ask the child the eliciting question. In this task, each item presented the child with two options, and the puppet then asked them to express their personal judgement or preference about the two. Each lead-in story described two boys or two girls with some characteristic including negation. Participants could only give a felicitous answer about their preference/judgement by using a relative clause containing negation. This task contained 16 experimental items and 6 filler items. An example item is shown in (4). All experimental items (untranslated) are included in Appendix D.

- (4) **Experimenter:** I have heard about two boys who were a bit odd. They didn’t want to eat their dessert. One boy did not want to eat his cake, and one boy did not want to eat his ice cream. Those two boys must be quite odd, right? Which boy do you find more odd?’
Target answer:

- a. Han (gutten) som **ikkje** vil **ikkje** ete isen/kaka si
He (boy_{DEF}) who (not) wants (not) eat icecream/cake REFL.POSS.
‘The boy who doesn’t want to eat his ice cream/cake’

A potential caveat concerning carrying out the relative clause task with the youngest participants is that across languages, relative clauses have been found to be somewhat challenging for very young children, particularly in tasks such as this.¹⁶ We therefore suspected that the youngest children might not be able to give many, or any, appropriate responses in this task. However, it was deemed necessary to include all participants (age 3;1-7;3) for the sake of comparison.¹⁷

Statistical analyses

In Paper 2, responses were coded as *a*) V-Neg, *b*) Neg-V, or *c*) others; whereas in Paper 3, responses were coded as *a*) S-Neg, *b*) Neg-S, or *c*) other. Paper 2 additionally coded whether the the first embedded verb in participant responses was an auxiliary or a main

¹⁶In elicited imitation tasks, English children from age 3;6 are able to produce relative clauses, although slightly erroneously. Swedish children aged 3;1-3;7 have a response rate of around 50% in elicited imitation and sentence completion tasks with relative clauses (Håkansson and Hansson, 2000), and Greek children are found to (infrequently) produce relative clauses from age 3 in natural speech (Mastropavlou and Tsimpli, 2011).

¹⁷An additional benefit of including the youngest participants, even though this task might be at the limits of their mastery, is that the results will contribute to insights into the milestones and development of typically developing children. Additionally, probing children’s production at the very beginning of their ability to use a certain construction can provide useful theoretical insights.

verb. In both studies participant production was analyzed using a logistic mixed effects model with the `glmer` function in R (Bates et al., 2015; R Core Team, 2018). In Paper 2, fixed effects included verb type (main vs. auxiliary verb), embedding predicate type (factive vs. assertive) and age; whereas in Paper 3 fixed effects were subject type (pronoun vs. DP) and age. Both papers included random intercepts for participant and item. All results with $p < 0.05$ were regarded as statistically significant.

4.5 Chapter summary

The questions asked in the studies of this thesis require data collected by means of different methods — as do the different types of participants. This chapter has stressed the importance of collecting data that give us a representative and accurate picture of language in use, and addressed how this has been ensured both when working with adult and child language. The first step towards increasing our knowledge of the distribution of embedded V-Neg in adult language was through studying corpora of spontaneous speech in Paper 1. This contributed with unbiased data from all types of embedded clauses, yielding insights into an empirically understudied (but theoretically much studied) phenomenon. Since studies of spontaneous speech are not sufficiently informative of ungrammaticality, and since infrequent structures can be hard to capture in such data, the next step in investigating V-Neg was carrying out a systematic inquiry into how this word order was perceived by adults in different clause types. This allowed us to determine whether V-Neg was (dis)allowed in certain clause types before we tested children's production in the same clause types. Next, the Neg-S word order was studied in adult spontaneous production, to increase the empirical base of knowledge concerning this word order. Finally, three different elicitation tasks were developed to study children's production of the three possible word orders in embedded clauses with negation. The systematic investigation of their language made it possible to document the trajectory of children's word order variation and pinpoint whether they seem to be aware of where the different word orders are used. Taken together, the use of complementary methods, as well as appropriate measures taken when working with children, will likely provide exhaustive data and a solid foundation for understanding the word order variation investigated.

Chapter 5

The papers and their main findings

As stated in Chapter 1, the overarching research question for this dissertation is *How do children learn (conditioned) generalizations from variable input?* The present dissertation contributes an answer to this question by studying word order variation in Norwegian embedded clauses. Three research questions were formulated to address aspects of this question (questions 1-3), and a fourth to provide an outlook on how this research contributes to general knowledge of children's language development (question 4). The smaller research questions were first introduced in Chapter 1, and are repeated below for convenience.

1. *What licenses and restricts the word order variation in embedded clauses in Norwegian adult language?*
2. *Which patterns can we observe in children's production of embedded clauses with negation and at which stage in their development?*
3. *How can these patterns be analyzed?*
4. *How can children's acquisition of embedded clause word order generalizations inform us about children's language development?*

In this chapter I give a summary of the three journal articles, and highlight the main findings from each paper. Through the paper synopsis, research questions 1 and 2 will be addressed, as well as somewhat implicitly 3. A general discussion follows in Chapter 6. There I will discuss variation in adult production and variation in child production from the three studies as part of a coherent picture, thus addressing questions 3 and 4.

5.1 Paper 1 - The V-Neg corpus study

The first research question concerned the characteristics of the adult language that children go on to acquire. This forms the basis for the study in the first paper, 'Distribution and function of embedded V-Neg in Norwegian. A corpus study'. This paper is published in *Nordic Journal of Linguistics*. The paper's aim was to look at a broad empirical founda-

tion of adult production of embedded clauses containing negation, to look for patterns of use of the non-canonical word order V(erb)-Neg(ation), as opposed to the canonical word order Neg(ation)-V(erb). An objective was providing necessary data to the ongoing theoretical debate around the licensing conditions of embedded V-Neg, and to learn more about which environments license V-Neg order. The paper examines spontaneous adult speech from three large corpora of Norwegian, together comprising a variety of speech situations, dialects and age of speakers. The corpus data were mined to provide *i*) a general overview of the frequency of embedded clauses and specifically embedded clauses containing negation, *ii*) clause types where the V-Neg order never appears, *iii*) clause types where the V-Neg order does occur, and *iv*) what characterizes those environments allowing V-Neg.

Embedded V-Neg has been discussed as a relatively marginal phenomenon. Contrary to this conception of the word order, findings in this paper show that V-Neg is used relatively frequently in embedded clauses containing negation. When the third possible word order (Neg-S) is excluded, 33% of embedded clauses with negation display the V-Neg word order, as opposed to 67% of clauses with Neg-V. As for the distribution of V-Neg, findings from this corpus study show that, in general, the V-Neg word order in spontaneous speech patterns relatively well with claims from the voluminous literature on the topic: As expected, it is never found in relative (1a), temporal (1b), or conditional clauses (1c), as illustrated with examples with the Neg-V order, all from the ScanDiaSyn corpus. These findings confirm claims in e.g. Franco (2010); Hrafnbjargarson and Wiklund (2009).

- (1) a. Han fikk kjøpt av en onkel som **ikke hadde** barn
 he got bought off an uncle who not had children
 'He got to buy from an uncle who didn't have children.'
- b. De blir sure når de **ikke får** sitte på
 they become cross when they not get sit on
 'They become cross when they cannot get a lift.'
- c. Det er ikke noe vits å stresse hvis du **ikke må**
 there is not any point to stress if you not must
 'There is no point in stressing if you don't have to.'

Not surprisingly, V-Neg is found in declarative complement clauses, i.e. *that*-clauses. This is the most investigated environment allowing V-Neg. However, the present study provides new insight into just how extensively V-Neg is used in such clauses: 32% (N=279) of *that*-clauses display the V-Neg order. Furthermore, the present corpus data confirm that V-Neg is used in 'consequence of degree' clauses, i.e. clauses of the type 'so X that'. An example of such a clause is shown with V-Neg in (2) from the Ringstad corpus. Consequence of degree clauses are discussed as a possible context for V-Neg in e.g. Heycock (2006); Julien (2010). The present data yield new insights into the prevalence of its use. These findings show that V-Neg is in fact the preferred word order (over Neg-V) in such

clauses. Finally, and somewhat unexpectedly, V-Neg is found in concessional clauses. This is claimed by Bentzen (2011) to be disallowed in Norwegian but is licit in similar contexts in Danish (Christensen et al., 2015) and Swedish (Hrafnbjargarson and Wiklund, 2009).

- (2) Puslespillet er så stort at vi får nesten **ikke** plass på bordet
 jigsaw.puzzle.DEF is so big that we get almost not place on table.DEF
 ‘The puzzle is so big that we almost don’t have room on the table.’

The findings in this paper have implications for what we can assume the licensing conditions for the non-canonical word order V-Neg to be – and not to be. In Chapter 2 I discussed that the current literature does not agree on what licenses V-Neg and divided accounts of its licensing into two coarse groups: *i*) those that posit lexical licensing by the semantics of the matrix predicate (following Hooper and Thompson 1973, an assertive or semi-factive matrix predicate licenses V-Neg, whereas it is not permitted under a factive matrix predicate); and *ii*) those that posit V-Neg conveys new information, or the main point of the utterance (Jensen and Christensen, 2013; Wiklund et al., 2009).

The corpus findings lead me to agree with much previous literature that V-Neg is not licensed by the lexical semantics of the embedding predicate. I instead suggest, along the lines of Jensen and Christensen (2013); Julien (2010, 2015); Wiklund et al. (2009), that V-Neg is licensed by discourse-pragmatics. My suggestion is that V-Neg may be used to convey discourse-new information, deviating somewhat from suggestions that it is related to the core meaning or main point of the utterance (Jensen and Christensen, 2013; Wiklund et al., 2009), or assertivity (Julien, 2010, 2015), that have proven to explain much of the V-Neg distribution, but importantly not all of it. In the following I give a brief summary of the argumentation for why V-Neg seems to be discourse-pragmatically licensed according to the findings in this paper.

In this study, I examine the predicates embedding V-Neg and find that they are typically assertive or semi-factive, thus confirming patterns already found in previous literature. However, it was also previously observed that the V-Neg order may be used in adjunct clauses, and this is further corroborated by the corpus data here: The V-Neg order is found in a range of adjunct clauses with the complementizers *fordi* (*at*) ‘because (that)’ and *slik at* ‘so that’, as shown in example (3). This distribution is surprising if a lexical licensing account of V-Neg is correct, since adjunct clauses by assumption are not licensed by a matrix predicate.

- (3) a. hadde låst rommet da for det at jeg *gidder ikke* fyre opp hele
 had locked room.DEF DM for it that I bother not heat up whole
 huset
 house.DEF
 ‘[I] had locked the room because I cannot be bothered to heat the whole

- house'
- b. blitt ødelagt sånn at de kunne ikke sende det
 become broken so that they could not send it
 '[It has] been broken so that they couldn't send it'

Another finding that appears problematic for clause-internal explanations of V-Neg is that in similar contexts, this word order may or may not be used: When the matrix verb or clause type is kept constant, the word order still varies. This is shown in example (4), where the matrix predicate is the same (*veit* 'know') but the word order varies (Neg-V in (4a), V-Neg in (4b)). There is no obvious difference between the two clauses that gives an indication of why one would have V-Neg and the other Neg-V, and this paper therefore argues that the choice of word orders is likely to be based on some clause-external factor, i.e. some discourse-relevant feature. Chapter 6 shows examples of similar clauses with different word orders, and differences in their immediately preceding context.

- (4) a. Du veit at du ikkje får lov
 you know that you not get permission
 'You know that you're not allowed.'
- b. Eg veit at eg skulle ikkje synest det
 I know that I should not think that
 'I know I shouldn't think so'

The paper argues that several of the clause types never or rarely found with the V-Neg order are linked to presupposition and familiarity (as suggested in the literature; see more details in Chapter 6). Since Neg-V seems to be the preferred word order in familiar environments, it seems likely that introducing discourse-new information facilitates the V-Neg word order. Such a solution addresses the issue of why both word orders are used in identical or similar contexts, as well as in adjunct clauses.

To the best of my knowledge, this is the first comprehensive overview of embedded V-Neg in Norwegian spontaneous speech. The overview gives an important background reference to future studies on the topic, not only by providing speech data for theoretical accounts, but also by lending itself to cross-linguistic comparisons. The study raises questions of whether there are overlooked empirical areas that might provide useful theoretical explanations of the phenomenon (for example there is an interesting distribution of V-Neg/Neg-V in different types of copular clauses), and suggests that it will be more fruitful to study the distribution of V-Neg related to discourse factors rather than clause-internal factors.

5.2 Paper 2 - The V-Neg child study

The second paper of the dissertation, 'Learning Embedded Verb Placement in Norwegian: Evidence for early overgeneralization', was written together with Dave Kush, has

been accepted for publication in *Language Acquisition* and is currently under revision. The paper considers characteristics and patterns of child language, as well as what generalizations and hypotheses children may assume. It does so through further investigating the word order under scrutiny in Paper 1, namely embedded V-Neg, as opposed to the canonical word order Neg-V. The paper specifically deals with the question of whether children are able to use the correct syntactic and semantic-pragmatic generalizations to restrict the distribution of V-Neg to the few clause types that allow it in adult language. To investigate this, we use an elicited production task where children are prompted to produce three types of embedded clauses containing negation (see description of the task in Chapter 4). The first type is relative clauses, that syntactically disallow the V-Neg word order in adult language (e.g. Franco, 2010), shown in (5).

- (5) *Guten som vil ikkje ete isen sin
 boy.DEF who wants not eat ice.cream.DEF REFL.POSS
 ‘The boy who doesn’t want to eat his ice cream.’

The second type is declarative *that*-clauses with an assertive matrix predicate, which is the environment where V-Neg is typically found in adult language, shown in (6a). The last type is also declarative *that*-clauses, but with a factive matrix predicate, which typically disallows V-Neg order for semantic-pragmatic reasons, shown in (6b) (e.g. Faarlund et al., 1997). Importantly, we use the semantics of assertive and factive matrix predicates here as representative of environments often containing new and familiar information, respectively. Thus we are not committing to an analysis of embedded V-Neg as licensed by the matrix predicate.

- (6) a. Karsten seier at han et ikkje godteri på måndagar
 Karsten says that he not eats sweets on Mondays
 ‘Karsten says that he does not eat sweets on Mondays’
 b. *Petra er glad for at barnevakta lagar ikkje kjøttkake
 Petra is happy for that babysitter.DEF (not) makes meatloaf’
 ‘Petra is happy that the babysitter isn’t making meatloaf’

The paper investigates 33 monolingual Norwegian children aged 3;01-7;3, and the most central finding is that children use the word order V-Neg to a much greater extent than adults. Children using the V-Neg order in embedded clauses is attested in previous literature (Håkansson and Dooley Collberg, 1994; Waldmann, 2008, 2014; Westergaard and Bentzen, 2007), and our data not only confirm those findings but also demonstrate that children’s systematic overuse of V-Neg is dependent on clause type, as well as show a developmental trajectory of children’s gradual acquisition of the target-like generalizations. Specifically, we see that there is not simply a generalized overuse of V-Neg, but a systematic pattern related to clause type. A comparison of children’s and adults’ production is illustrated in Figure 5.1, with the proportion of V-Neg in their production on

the y-axis and clause type on the x-axis. Child participants are plotted in two different groups: Younger children (age ≤ 5) and older children (age > 5). As the plot shows, children produce the V-Neg word order in all three clause types tested, but they use it with different frequencies in each clause type. Children use V-Neg with a higher frequency in the clause type that allows this word order (*that*-clauses embedded under assertive predicates) than in the other clause types, and they use the V-Neg order least in the clause type that syntactically disallows it (relative clauses). The older children, similar to adults, do not use the V-Neg order in relative clauses, while younger children do. In contrast to this, older children use V-Neg in factive *that*-clauses. A similar tendency in children's production is found by Waldmann (2008): Children overuse the V-Adv order in Swedish, but nevertheless do so in a pattern reflecting its prevalence in clauses with three different versions of the complementizer *att* 'that'.

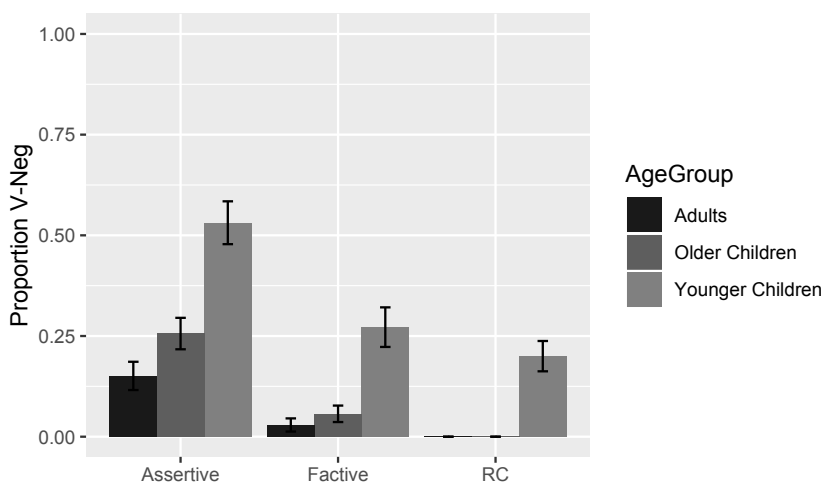


Figure 5.1: Children's and adults' production of embedded V-Neg in three different clause types. Plot from Paper 2.

We take our findings to mean that even though children overuse, or overgeneralize, the V-Neg word order, they seem to have made the relevant distinctions between clause types: They distinguish relative clauses from two types of *that*-clauses, and connect these clause types to the licensing of V-Neg. Since children do not use V-Neg in relative clauses after age 5 (i.e. in the older group), but they do (infelicitously) use it in factive *that*-clauses, it seems the syntactic restriction on use of V-Neg is acquired before the semantic-pragmatic distinction. Because children's overuse of V-Neg in factive clauses persists beyond the age investigated in this paper, the Neg-V/V-Neg word order alternation seems to be acquired late.

While children's production reflects adult production in relative frequencies, indicating that they have acquired the essential syntactic and semantic-pragmatic distinctions, the

lingering overuse of V-Neg as compared to adults indicates some uncertainty about the final generalizations. We take this to mean that the children are considering hypotheses where V-Neg is allowed in all clause types. We speculate that the uncertainty children display may be rooted in difficulties ascribing the correct semantic-pragmatic properties to embedding verbs, which in turn causes uncertainty regarding what discourse-pragmatic information these verbs express. Previous literature suggests that children may prefer to interpret some non-assertive complement clauses as assertive (Hacquard and Lidz, 2018; Lewis et al., 2017), and problems of correctly mapping assertivity to predicates may cause some of children's difficulties with where to use V-Neg. Children's uncertainty concerning the end-state generalizations might also be generated by the infrequency of embedded clauses containing negation in their total input.

An additional finding is that children more often use the V-Neg order when the finite verb is an auxiliary than when it is a main verb. It is not clear that adults make this distinction, and so this finding is interpreted as children entertaining more fine-grained hypotheses than they have evidence for in their target language, aligning with findings of child production in other clause types made by Westergaard (2009).¹

In summary, this study confirms an established pattern from previous literature, namely that children use V-Neg in embedded clauses, and even occasionally in relative clauses (Waldmann, 2008; Westergaard and Bentzen, 2007), where this word order is absolutely unacceptable in adult language. The study also confirms that children are sensitive to clause type or complementizer type, as in Waldmann (2008), where they use V-Neg to a different degree in clauses with different variants of the complementizer *att* 'that'. The present study provides important knowledge about the clause-type distinctions children are able to make: Children distinguish syntactically different clause types from each other, but also those differing in the semantics and pragmatics of their embedding predicate. These findings have implications for our understanding of children's knowledge at different stages of development, including both what the child is able to perceive from the input, the hypotheses she forms about the target grammar and what these hypotheses are based on. Based on our findings, we can assume a learner that is aware of clause-type distinctions from an early age (supporting a view of acquisition as in Westergaard, 2009). Furthermore, we see the outline of a learner that hypothesizes rules of the target language for each fine-grained clause type. Finally, an important aspect of this investigation of children's acquisition of an infrequent word order variation is insight into what the acquirer does when facing variation: In general, children do not adhere to using only one word order, but rather acquire and use both options.

¹Distinctions between auxiliaries and main verbs in adult production are found by Håkansson and Dooley Collberg (1994); Heycock et al. (2013), but not by Waldmann (2014); Westergaard and Bentzen (2007). In our acceptability study (see Chapter 4), adults rated embedded Aux-Neg slightly higher than MainVerb-Neg, but in this elicitation experiment there was no such difference.

5.3 Paper 3 - The Neg-S study

The dissertation's third and final paper, 'Children's acquisition of word order variation: An experimental study of subject placement in embedded clauses in Norwegian', was written with Marit Westergaard and submitted to *The Journal of Child Language*. This paper investigates the third, and least common, word order found in embedded clauses in Norwegian, namely the Neg-S(ubj) order. It discusses Neg-S as opposed to the S-Neg order, treated as low vs. high subject placement, and addresses research questions 1-4. The Neg-S study comprises two studies: A corpus study of adult production of subject placement in embedded clauses, and an experimental study of children's production of the same (including adults as control participants).

The aim of the investigations is twofold: As discussed in Chapters 2 and 3, subject placement in main clauses has been studied and shown to follow quite a clear pattern of the distribution both in adult and child production. In adults' main clauses, DP subjects are almost always found to occupy the low position whereas pronominal subjects most often occupy the high position, and children reach these generalizations before age 3 (e.g. Westergaard, 2011). In contrast, subject distribution in embedded clauses is little studied, and existing studies show discrepancies with respect to the pattern of subject types. In general, the low subject position is found to be vanishingly rare in embedded clauses, but DP subjects in particular have an unclear status, both in adult and child production (Westergaard, 2011). Thus, the first purpose of the study was to investigate a larger sample of adult production data and perform a detailed analysis of subjects both in the S-Neg and the Neg-S constellations. This would both inform us about the licensing of high and low subjects in the adult language, and form a foundation for child acquisition studies of the alternation. The second purpose of the study was to collect systematic language production of children, to investigate whether they are aware of the low subject position in embedded clauses given its infrequency in their input, and whether the acquisition trajectory of subject placement in embedded clauses resembles that of main clauses.

To investigate these matters, we first examined adults' spontaneous production in three large corpora. Our searches returned 870 relevant utterances, i.e. embedded clauses with a subject and negation. The general pattern of subject distribution is that the high subject position is highly preferred (in 84% of clauses, N=729), and correspondingly 16% (N=141) of subjects are placed in the low position. This largely correlates with tendencies found in the existing literature (Anderssen and Westergaard, 2010; Garbacz, 2005; Westergaard, 2011). As discussed in Chapter 2 (for main and embedded clauses combined) a general assumption about the two subject positions is that they correspond to information structural differences: High subjects express given information and low subjects express new information (e.g. Westergaard, 2011). This is generally thought to coincide with pronouns and definite DPs in the high position and indefinite DPs in the low position.² Splitting the subjects up by type (pronouns vs. DPs), we found that pro-

²I distinguish between pronouns and full DPs, the latter excluding pronouns. In the paper, we use the slightly more theory-neutral term NP, instead of DP.

nouns were overwhelmingly used in the high subject position (87%), while DPs were relatively evenly distributed, with 54% in the low and 46% in the high position. This is illustrated in (7a) with a low DP subject, in (7b) with a high DP subject, and in (7c) with a high pronominal subject.

- (7) a. Litt av sjarmen ute i periferien er at **ikke veiene** er
 some of charm.DEF out in periphery.DEF is that not roads.DEF are
 autostrada
 autostrada
 ‘Some of the charm out in the periphery is that the roads are not autostrada.’
- b. En av reglene i BigBrother er at deltakerne **ikke** har
 one of rules.DEF in BigBrother is that participants.DEF not have
 lov til å diskutere (...)
 permission to discuss (...)
 ‘One of the rules in Big Brother is that the participants are not allowed to discuss (...)’
- c. Det er en viss trygghet at vi **ikke** veit noe
 it is a certain assurance that we not know anything
 ‘It is a certain assurance that we don’t know anything.’

Table 5.1 (Table 3 in Paper 3) shows an overview of the distribution of subjects and subject types. While the prevalence of pronominal subjects in the high position coincides with findings in Westergaard (2011), the distribution of DP subjects is in between the proportions from previous findings (where 35.3% and 73.7% of DP subjects were used in the high position Westergaard 2011).

Pronouns		DPs	
S-Neg	Neg-S	S-Neg	Neg-S
87% (N=638)	13% (N=96)	46% (N=27)	54% (N=32)

Table 5.1: *The distribution of pronominal and full DP subjects in high and low subject positions in embedded clauses. Table 3 in Paper 3.*

A more in-depth study of the DP subjects shows that the above-mentioned pattern of definite vs. indefinite DPs is not as clear as expected: Definite DPs are found in both positions, and so are indefinite DPs. In fact, contrary to the assumption that definite and indefinite DPs would pattern in the high and low positions respectively, corresponding to given vs. new referents, most definite DPs (22/32) are used in the low position, and most indefinite DPs (13/19) are used in the high position. In addition to definiteness, we examine specificity, weight and prosodic stress, and find no clear pattern correlating to distribution in the high and low positions. These observations have two important consequences: First, it shows that the distribution of DP subjects (in embedded clauses)

demonstrates great variability and cannot be pinpointed to any one particular feature. Secondly, the unclear subject pattern indicates that for children acquiring it, the most reliable cue is the syntactic category, i.e. the distinction between subject types.

The second study in this paper addressed the matter of embedded subject placement in acquisition by studying children's production of subject placement in an elicited production task. Thirty-three monolingual Norwegian children aged 3;1-6;1 participated. The task was designed to elicit *that*-clauses containing negation, with the aim of investigating whether children used both subject positions and whether they discriminated between the two different subject types (DPs and pronouns) (details of the task were outlined in Chapter 4).

Whereas adult control participants only used the high subject position, children used both positions. Children's responses are illustrated with a high pronominal subject in (8a) and a low DP subject in (8b).

- (8) a. (Frøken Kanin e glad for) at hu **ikke** spise løvemat til frokost
 (miss Bunny is happy for) that she not eats lion.food for breakfast
 'Miss Bunny is happy that she doesn't eat lion food for breakfast.'
- b. (Petra e glad for) at **ikke** den barnevakten laga kjøttkaka
 (Petra is happy for) that not that babysitter made meatloaf
 'Petra is happy that that babysitter didn't make meatloaf.'

Since adults never used the low position in this task, children's production shows a massive overuse of the low position as compared to the adult language. Figure 5.2 shows a plot of children's production. Each dot represents a single participant's proportion of Neg-S, with both subject types combined. As the plot reveals, some children only used the low subject position, some only used the high position, and some used both (these three different patterns in production will be discussed below). Children distinguished between subject types, and used DP-subjects more often in the low position than pronominal subjects (59% of DP-subjects and 34% of pronominal subjects were low). While this pattern deviates from adult production in this particular task, it aligns with adult production in our corpus studies as well as previous ones in the literature. It is also similar to findings regarding children's subject placement in main clauses (Westergaard, 2008). However, both with DP-subjects and pronominal subjects, children use the low subject position more than adults, as compared to adult production evidenced in corpora. Notably, while children have an adult-like distribution of subjects in main clauses already by age 3 (discussed in Section 3.2.2), their production in embedded clauses is not target-like until age 5.

A crucial finding in our study is that while some children use both subject positions, some are categorical, using only the low or the high position. In the categorical children's production, we see a U-shaped curve: The youngest and the oldest children use only the high subject position, and the children in between these age groups use only

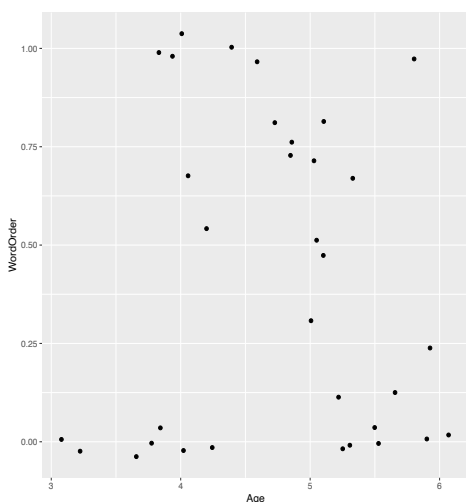


Figure 5.2: *The proportion of Neg-S (100% Neg-S = 1.00, 100% S-Neg=0.00) in each child participant's production on the Y-axis, with age on the X-axis. Plot from Paper 3.*

the low position. We suggest that this finding indicates a frequency threshold: Given the infrequency of the low subject position in embedded clauses, the youngest children might not have encountered this as an option in the target language at all.

As for children's general preference for the low subject position as compared to the target language, we suggest that this is caused by a principle of economy, in which children move elements only as far as they find sufficient evidence for doing so in their input, following Westergaard (2009). Since the high and low subject positions are argued to be related to information structure (given subjects high, new subjects low), we entertain the possibility that children's production is caused by them having a pragmatic misunderstanding of given and new information. This suggestion is made by e.g. Schaeffer (2000) for children's preference for low objects (in Dutch). However, we conclude that this does not provide a likely explanation for our data: Children's overuse of the low subject position in embedded clauses persists long after subject placement in main clauses is acquired. It seems unlikely that children would acquire the same pragmatic understanding at different ages for different clauses. Furthermore, a point made by Westergaard (2008) is also valid here: Children's understanding of given and new information is typically argued to be such that they initially err in the direction of assuming information is given. This would entail them overusing the high subject position, not the low position, which is what we see in our data.

This paper contributes to the study of variation in an environment that is somewhat overlooked in the literature, i.e. variable subject placement in embedded clauses. The paper makes a crucial empirical contribution, adding to scarce findings in previous literature on both children's and adults' production of subjects in embedded clauses. The

major pattern found in adult production, namely that adults prefer pronominal subjects in the high position and vary with DPs, confirms findings from Westergaard (2011). So does the finding that children use the low position more than adults, although this has not previously been established for subjects in embedded clauses, only for subjects in main clauses (Anderssen and Westergaard, 2010; Westergaard, 2008, 2011) and objects (Anderssen et al., 2010). The paper further contributes new knowledge of how there is no apparent correlation between specific features of DP subjects and their placement in the high and low position, thus pointing clearly towards the need for further research to pinpoint any factors that restrict or facilitate the use of such subjects.

The acquisition study in this paper makes an important contribution as well, specifically to the question of what children's production looks like when they are faced with a point of variation that is rarely attested in their input. The general finding that children overuse the low subject position, even when they likely almost never encounter it as a possibility in their target language, supports a view of children having an inherently economical approach to syntactic movement (Westergaard, 2009). However, while the general picture is that children overuse the low position, our findings also indicate that some of the youngest children might not have encountered the low position at all, and they only entertain the high position as a possibility in the target grammar. This has possible implications for our knowledge of what constitutes a sufficient amount of evidence for children to consider a certain word order as possible in the target grammar. Similar to the V-Neg child study, the Neg-S study adds new knowledge concerning how children deal with word order variation, namely that they in general include the available options in their grammar from early on.

Chapter 6

Discussion

This dissertation comprises three independent papers, presenting four studies in total: two on adult production and two on child production. Each paper considers one word order variation in embedded clauses in isolation. Focusing on one phenomenon at a time was necessary to adequately address questions concerning generalizations that could be made about the distribution and production of each word order. Since the variation treated in each of the papers occurs in similar environments (embedded clauses with negation), taking a holistic view of word order variation in embedded clauses might give new insights. Thus, in this chapter, I use findings and perspectives from each of the studies to provide more unified answers to research questions concerning how and when children acquire generalizations about (conditioned) word order variation with negation in embedded clauses, and how their acquisition of these generalizations can inform us more generally about children's language development.

In this chapter I first discuss adults' aggregated production of word orders in embedded clauses. I will argue that there are no absolute restrictions on the use of the exceptional word orders V-Neg and Neg-S. Since there are no apparent categorical restrictions concerning, for example, lexical properties (such as subject category, or semantics of embedding verbs), and no apparent categorical restrictions concerning clause types (disregarding the few syntactic environments that disallow V-Neg), I suggest that the two exceptional word orders are used to express discourse-pragmatically relevant information. Specifically, I suggest that they are used to convey discourse-new information. I start the discussion of adults' production by addressing a discrepancy in their production across methodologies, maintaining that corpus production is the most reliable source of adult generalizations about the word orders under scrutiny.

Further, I will show that one of the most fundamental findings from the child studies is that children use all three word orders (Neg-V, V-Neg, and Neg-S) in proportions that roughly recapitulate adult distinctions from around the age of 3. However, I will address the important way in which child production differs from that of adults, namely

that children use the exceptional word orders more than adults, and the canonical word order less. I will argue, largely following the view of Westergaard (2009, and related works), that children's ability to differentiate between the different word orders demonstrates their ability to perceive relevant aspects of the input and learn corresponding fine-grained rules at an early age, and that the overuse of the exceptional word orders is caused by an inherent preference for using low positions. I will also emphasize the role of children's growing ability to perceive complex and infrequent input, suggesting that some generalizations are carried over from simple (main) clauses to complex (embedded) clauses.

6.1 Generalizations in the target language

6.1.1 Discrepancy in production across methodologies

For the studies of variation in adults' language in this dissertation, data were collected through corpora of spontaneous speech (Papers 1 and 3), acceptability judgements (initially part of Paper 2), and elicited production (as control participants in the tasks for the child studies, Papers 2 and 3). A notable fact about the data is that the frequency with which adults use exceptional word order differs widely across methods: Exceptional word orders are relatively frequent in the data from the speech corpora, but relatively infrequent in participants' productions in elicitation tasks. For example, numbers for V-Neg in adults' production differ between spontaneous speech, where V-Neg is used in 32% of *that*-clauses (N=279/863; see Paper 1), and elicited production, where it is almost never used (only 19 total occurrences of 209 *that*-clauses, i.e. 9%; see Paper 2 for more details). Similarly, whereas Neg-S is used by adults in spontaneous speech, there is not a single occurrence of this word order in the elicited production task (Paper 3). Thus, in an experimental setting, adults nearly always used the canonical Neg-V order.

Chapter 4 addressed adults' prescriptive attitudes, and it was shown how Neg-V is asserted as the 'correct' word order in literature on Norwegian grammar. While it was expected that adults would not produce V-Neg in all contexts in Paper 2 (the V-Neg elicitation task), such as relative clauses and factive clauses, a surprisingly small number of the assertive *that*-clauses used V-Neg (only 16/106, 15%, of such clauses). This is surprising in comparison with the much higher frequency of V-Neg in such clauses in the corpus study (assertive *that*-clauses found with both word orders make up 157 occurrences, of which 59 are with V-Neg, i.e. 37.5%; see Table 7 in Paper 1). Differences across tasks are likely to be an effect of prescriptivism, i.e. participants aiming to use what they believe to be the 'correct' language in a test situation. This issue is also encountered and addressed in studies of V-Neg in other Scandinavian languages (Heycock and Wallenberg, 2013; Caplan and Djärv, 2019). It is also thoroughly addressed by Sollid (2005), who claims it is likely that participants in an experimental setting will be affected by their knowledge of the grammar of the written language, as well as their knowledge and perception of norms in the speech community and of variation in their language.

Prescriptive attitudes could be responsible for the absence of Neg-S in elicited productions in Paper 3. However, additional possibilities are mentioned in Paper 3. One is that adult participants could be self-priming, thus only using one word order. Alternatively, the absence of Neg-S could reflect the pragmatics of the elicitation task: We argued that the high subject position is reserved for given subjects. In the experiment, referents corresponding to embedded subjects were always familiar, so it was always felicitous for them to use the higher position. Unfortunately, the task was designed in such a way that teasing these factors apart is not possible.

When discussing adult generalizations about the embedded clause variation, the corpus data will be used as a foundation. However, the discrepancy in adult production across tasks clearly shows the importance of, and challenges for, investigating this particular variation through suitable means, in order not to invoke prescriptivism in adult participants. Since adults' production is divergent in different tasks, child production is measured against adult production in different ways, especially for subject placement, where it is both seen in contrast to adults' elicited production and their corpus production in the same paper (Paper 3).

6.1.2 Discourse relatedness

Turning now to the distribution of the three different word orders in adult production (from corpus data in Papers 1 and 3), I suggest that the exceptional word orders, V-Neg and Neg-S, correlate with the mention or introduction of discourse-new information in adult language. I first discuss V-Neg, then turn to Neg-S.

Paper 1, the V-Neg corpus study, notes that there are many proposals for the conditions under which the word order is licensed (also addressed in Section 2.2.2). These proposals can be categorized as viewing licensing (or non-licensing) of V-Neg as a lexical feature of the selecting predicate (following Hooper and Thompson 1973, but see also Djärv et al. 2017), or as an issue of pragmatics. For the latter, proposals are that V-Neg correlates with when the embedded clause contains the core meaning of the sentence (Jensen and Christensen, 2013; Wiklund et al., 2009). The findings from Paper 1 provide support for the pragmatic licensing approach, but suggest that what is relevant for the licensing of V-Neg is that the embedded proposition introduces discourse-new information, as is also suggested in a new study by Caplan and Djärv (2019) (see below).

In Paper 1, I pointed out that most of the previous studies only investigate a restricted range of embedded clauses, and that broadening our empirical foundation of embedded environments where V-Neg does (or does not) occur is likely to give knowledge relevant to understanding the appropriate licensing conditions for V-Neg. The corpus data confirmed certain core generalizations, for instance that V-Neg is not used in relative clauses (also consistent with the acceptability judgment data shown in Chapter 4), and that it is used in declarative (*that*-)clauses, so-called peripheral adverbial clauses (of the type 'so that' and 'because'), and consequence of degree clauses.

While both the V-Neg corpus study and the acceptability judgement find that V-Neg occurs less often used or is less accepted in complement clauses with a factive predicate than those with an assertive predicate, further findings in the corpus study give clear indications that this is not directly caused by the selection criteria of the embedding predicate. Rather, findings in the V-Neg corpus study indicate that this word order is licensed by discourse-pragmatics. The first piece of evidence supporting this view is that V-Neg may be used in both complement clauses and adjunct clauses. Since adjunct clauses are not selected by the matrix predicate, they cannot be used to argue for the view that V-Neg is licensed by the semantics of the matrix predicate. The second piece of evidence for discourse-pragmatic licensing is the use of both V-Neg and Neg-V in almost identical contexts. An example of this is that they can both be embedded under the predicate *veit* 'know' (this was shown in example (4) in Section 5.1). This further indicates that neither lexical selection nor clause type decisively predicts verb placement.

The issue of clause types is particularly relevant for the discussion of licensing and distribution of V-Neg vs. Neg-V, because in certain clause types one of the word orders is used substantially more than the other. Assuming that specific clause types are related to certain functions, or features, examining which word order is preferred in which clause types can further inform the question of what licenses V-Neg. For example, V-Neg is never used in certain types of adverbial clauses, such as temporal clauses (supporting claims from e.g. Hrafnbjargarson and Wiklund, 2009). This is exemplified in (1), which is actually a Neg-V clause from the ScanDiaSyn corpus, altered to display the ungrammaticality of V-Neg here. Temporal clauses are claimed to be presupposed (Hengeveld, 1998), i.e. to express familiar information. Another example is copular clauses. Even though V-Neg is generally frequently used in clauses embedded under a copula, in the cases where the matrix clause is in fact an extraposed subject containing a copula, Neg-V is preferred to V-Neg: only 3 of 66 clauses with an extraposed subject with a copula contain V-Neg. This is illustrated with V-Neg in (2a) from the ScanDiaSyn corpus and Neg-V in (2b) from the Ringstad corpus. Copular clauses with extraposed subjects are also argued to contain familiar information (see Paper 1 as well as Kiparsky and Kiparsky 1971; Gentens 2015).

- (1) *De blir sure når de får ikke sitte på
 they become annoyed when they get not sit on
 'They get annoyed when they don't get a lift.'
- (2) a. Så er det helt klart at vi hadde ikke fått filmen først
 then is it completely obvious that we had not gotten movie.DEF first
 'It is completely obvious that we were not the first to get that movie.'
- b. Det er veldig bra at det ikke er så god mikrofon
 it is very good that it not is so good microphone
 'It's very good that the microphone isn't so good.'

The observations above show clear a tendency to disprefer V-Neg in environments ar-

gued to contain familiar information. In those clauses, Neg-V is preferred, or the only acceptable order. On the other hand, V-Neg seems to be used in clauses that do not present familiar information, but rather new information. In the following I will show two specific examples of a V-Neg clause conveying new information.

As pointed out in Paper 1, ‘because’-clauses with the two word orders reveal a discourse-relevant difference. Examples (3a) and (3b) show identical ‘because’-clauses, the former with the V-Neg order and the latter with the Neg-V order.¹ It is possible to add a contrasting clause towards the end of this utterance, but a contrasting clause is only felicitous following the Neg-V utterance, not the V-Neg utterance. Thus, the contrasting clause added to the V-Neg clause in (4a) makes the utterance unacceptable or odd.

- (3) a. Det går dårlig på eksamen fordi jeg *har ikke* med kalkulator
 it goes bad at exam.DEF because I have not with calculator
 ‘The exam will go badly because I didn’t bring a calculator’
- b. Det går dårlig på eksamen fordi jeg *ikke har* med kalkulator
 it goes bad at exam.DEF because I not have with calculator
 ‘The exam will go badly because I didn’t bring a calculator’
- (4) a. Det går dårlig på eksamen fordi jeg *har ikke* med kalkulator # ikke
 it goes bad at exam.DEF because I have not with calculator – not
 fordi jeg er dum
 because I am stupid
 ‘The exam will go badly because I didn’t bring a calculator, not because I’m stupid’
- b. Det går dårlig på eksamen fordi jeg *ikke har* med kalkulator – ikke
 it goes bad at exam.DEF because I not have with calculator – not
 fordi jeg er dum
 because I am stupid
 ‘The exam will go badly because I didn’t bring a calculator, not because I’m stupid’

The availability of contrasting the Neg-V clauses, illustrated by the felicitous clause in (4b), indicates the existence of several possible reasons for the exam going badly, entailing that the participants in the conversation have knowledge of this range of reasons. In contrast, the infelicitous result of contrasting the V-Neg clause suggests that a ‘because’-clause containing V-Neg does not entail known information, but rather introduces unknown, i.e. new information.

There are also observations from the surrounding discourse of V-Neg vs. Neg-V clauses suggesting that when Neg-V is used, it contains previously mentioned information, whereas V-Neg does not. Example (5) contains two clauses embedded under the semi-factive

¹The examples given here are slight alterations of an actual utterance in the NoTa corpus. The original utterance had the V-Neg order.

skjønne ‘understand’: (5a) is from the BigBrother corpus and contains the V-Neg order, while (5b) is from the NoTa corpus and contains the Neg-V order.

- (5) a. Temaet er at hun må skjønne at hun *kan ikke* bare gjøre sånn
 topic.DEF is that she must understand that she can not just do that
 ‘The topic is that she has to understand that she can’t just do that.’
- b. Jeg skjønner at han *ikke gidder* da
 I understand that he not bothers DM
 ‘I understand that he can’t be bothered.’

The discourse immediately preceding the V-Neg utterance in (5a) shows no specific mention of the embedded proposition of the clause under scrutiny. This is shown in (6). In fact, the speaker signals that what is important is not what is recently mentioned, by saying ‘*And that’s not really the topic either, because the topic is (...)*’. Here, I follow Kaltenböck (2005)’s definition of a new-anchored complement, where the information in the complement is irretrievable but in some way linked to the previous context (Kaltenböck, 2005, 134), and view the V-Neg clause as conveying new information.

- (6) PM: Selvfølgelig er det tema hun tar å hiver tøyet mitt fra vaskebalja mi. (*Of course it’s a topic that she is throwing my clothes out of my washtub.*)
 R: jævlig – jævlig provos - ... (*Damn – damn provoc -*)
 PM: Og det er ikke det som egentlig er temaet heller for temaet er at – hun må skjønne at hun kan ikke bare gjøre sånn – for det går utover andre. (*And that’s not really the topic either, because the topic is that she has to understand that she can’t just do that, it affects others.*)

On the other hand, preceding the Neg-V clause in (5b), there is an explicit mention of the proposition of this clause, as shown in (7). A first utters that ‘He can’t be bothered’, before B replies that he understands that he can’t be bothered, thus repeating and embedding the first utterance, notably with a different word order: Since the first mention is a main clause, the word order is V-Neg, while the utterance under scrutiny here is a Neg-V clause. I view this information as given, again following Kaltenböck (2005), who defines ‘textually evoked complements’ as ‘state-of-affairs that have been explicitly evoked in the preceding verbal discourse’ (Kaltenböck, 2005, 132).

- (7) A: Og du vet Eto’o går ikke opp og hedder har du merka det? *And you know Eto’o doesn’t go up and head [the ball] have you noticed that?*
 A: Han gidder ikke – han gidder ikke. *He can’t be bothered – he can’t be bothered.*
 B: Han har ikke nikka en ball. *He hasn’t headed a ball*
 B: Nei men jeg skjønner at han ikke gidder da – han skårer alle måla med beinet liksom. *No but I understand that he can’t be bothered – he scores all the goals with his leg.*

In light of the distribution of the two word orders V-Neg and Neg-V and the observations outlined above, I suggest that the V-Neg order occurs as an interaction with the larger discourse. Specifically, the idea is that the embedded proposition conveyed by the V-Neg order is new.² In light of this suggestion, the correlation with V-Neg clauses under assertive predicates is that assertive complement clauses tend to express discourse-new information. The role of discourse novelty is explicit in examples (6) and (7) above. In (7), the only possible word order is in fact Neg-V: Using V-Neg here would be odd or infelicitous.³ The infelicity of V-Neg in this context is likely caused by the explicit, recent mention of the proposition. On the other hand, in (6), both V-Neg and Neg-V would be possible word orders. The possibility of variation could be caused by the speakers' assumptions about the epistemic state of the listener: Is the information being conveyed likely to be familiar information to the listener, or not?

A similar proposal is also made by Caplan and Djärv (2019) in a corpus study of written material in Swedish. They investigate the rate of V-Neg across different written genres (blogs, newspapers and novels) and argue that if V-Neg were lexically licensed but (importantly) not pragmatically licensed, one would expect the distribution of this order to be constant under similar embedding predicates across genres (which they take to represent different discourse types). Contrary to this expectation, they find that the rate of V-Neg varies substantially across corpora, within the same predicate class. They suggest that a V-Neg proposition has some interpretive effect, namely that it constitutes discourse-new information. Their proposal is based on complement clauses and the ability of different embedding predicates to introduce discourse-new information. Since two independent studies (Caplan and Djärv (2019) and my Paper 1 (Ringstad, 2019)), coming at the topic from different perspectives, all suggest that the V-Neg order is licensed by discourse-new information, this seems to be a very promising road to pursue for later research.

Neg-S order in adult production (Paper 3) has been proposed to introduce new information (e.g. Westergaard and Vangsnes, 2005; Westergaard, 2011): The low subject expresses new information while the high subject expresses familiar information. Previous literature has typically referred to the high and low subject positions as topic and focus positions or positions for given and new information, and this has led to the generalization that pronominal subjects occupy the position above negation whereas DP subjects

²Note that this analysis is not based on an investigation of individual sentences in the corpus material, with the exception of the examples shown in the text above. It is a suggestion about where to concentrate future research on the topic, based on the overall distribution of V-Neg. Furthermore, I will not attempt here to give an account of the syntactic technicalities allowing the verb-movement in a V-Neg clause to be discourse-pragmatically related. If the proposition is new, this is likely achieved through the verb lexicalizing C, thus connecting the embedded proposition to the discourse, but I leave it for future research to determine the exact triggers responsible for this. In any case, the suggestion that verb movement has consequences for semantic meaning, truth value or assertive status, relates to work on German in particular (see e.g. Truckenbrodt, 2006; Antomo, 2012).

³The judgement about this clause is based on a few Norwegian speakers' introspection, and naturally needs further investigation.

are somewhat more flexible, according to discourse factors. Westergaard (2011) shows, through a corpus investigation of adults' naturalistic speech, that such a division is not tenable in main clauses: DP subjects are almost never used in the high position, while pronominal subjects are used to some extent in the low position (even when they do not bear prosodic stress, indicating focus). The same corpus study found that in embedded clauses, DP subjects are more often used in the high position. However, the raw numbers of occurrences in embedded clauses were low (N=17 DP subjects), and thus not entirely conclusive.

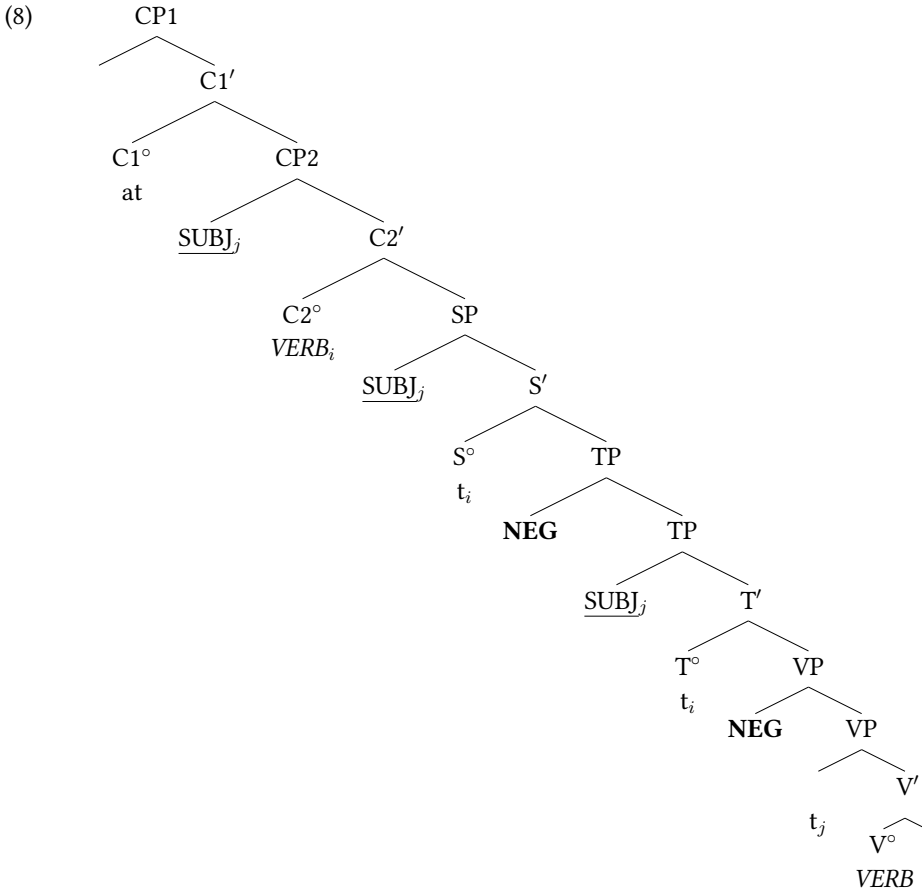
The corpus data in the Neg-S study (Paper 3) provide new findings on embedded clauses but support the view that the subject distribution is related to the expression of discourse-new or given referents (low and high subjects, respectively). Whereas the distinction between high and low subjects traditionally has been drawn as closely correlating with the distribution of pronominal and DP subjects, the findings in Paper 3 show that there is a tendency for pronominal subjects to occupy the high position, but that DP subjects occur with relatively similar frequencies in both positions. No lexical, semantic or prosodic factors were found to correlate clearly with any subject position, with the exception of pronominal subjects being preferred in the high position: The corpus study in Paper 3 examined DP subjects in both positions, and we examined possible effects of definiteness, specificity, weight (as expressed by number of syllables) and prosodic stress. Pronominal subjects in the low subject position were also checked for prosodic stress. No clear correlation was found between any of these factors and the distribution across the two subject positions. The conclusion in Paper 3 is that the most reliable predictor of subject distribution in embedded clauses is the type of subject (pronominal vs. DP), and the frequency with which they occur must also be part of this reliable feature. From a wider perspective, the great variability in the properties of the DP subjects used both in the Neg-S order and in the S-Neg order can reflect discourse-related information. However, instead of representing discourse-new or familiar information with a clear division between indefinite DPs as referents for the former and definite DPs for the latter, the great variability of subject features in this present study indicates that new or familiar information may be expressed in a number of ways, rather than as a direct articulation of a lexically related feature.

In summary, it seems both of the exceptional word orders can reflect discourse-new information: The V-Neg order by introducing a new proposition, and the Neg-S order by introducing a new referent. However, for both word orders this seems to be a tendency rather than an absolute rule, which fits with the discourse-related explanation of their distribution under the assumption that the discourse might contain a variety of nuances affecting the choice of word order, and that the syntax is more categorical.

6.2 Developing the target grammar

Section 2.1.3 showed that in order to reach the target grammar of embedded clauses containing negation, children need to learn the following syntactic generalizations, re-

peated here as (8): *i*) subjects must move, either short- or long-distance, both in main and embedded clauses; *ii*) verbs move (V-to-C) in main clauses and a subset of embedded clauses but not in the majority of embedded clauses; and *iii*) negation may appear in a low or a high position. Children also need to learn appropriate conditions governing these generalizations, such as *i*) when a subject undergoes a longer move, it most often represents a known referent, and *ii*) certain environments allow embedded verb movement to C, specifically clauses facilitating discourse-new information.



How do children arrive at these generalizations? If we expect children to recapitulate the most frequent analysis that they hear (in embedded clauses), they would be most likely to produce the Neg-V order in all embedded clauses. As we have seen, this is the most frequent word order in adult speech. The Neg-V word order is also potentially preferred for other reasons. If syntactic economy is important in acquisition (see Chapter 3), the Neg-V order has no verb movement, so it is the most economical word order in terms of syntactic movement. Using only the Neg-V order in all embedded clauses would also

only require children to assume one large generalization for all embedded clauses, so it intuitively seems simple and efficient.

Children's production as found in the present studies shows that at age 3, children use all three possible word orders in embedded clauses (Neg-S, Neg-V, V-Neg). However, they do not use them in a completely adult-like manner. While they are using all, and only, the word orders found in their target language, they are using the exceptional word orders (Neg-S and V-Neg) to a much greater extent than adults, and in clause types where they are not licit in the adult language (using V-Neg in relative clauses and factive *that*-clauses). At age 5, children are target-like with respect to subject placement (Neg-S/S-Neg), and in not using V-Neg in clauses where it is syntactically disallowed in the target grammar (relative clauses). However, at age 5 they do not have the correct target generalizations for V-Neg in declarative clauses distinguished by the semantics/pragmatics of the embedding predicate. At age 7, their production of V-Neg in factive declarative clauses has declined, and is at a more target-like level than in the previous stages, but it is still not completely adult-like. The present studies do not include participants older than 7, and we can therefore not conclude how long children's developmental trajectory of embedded verb placement lasts before it reaches the target.

In the following, I will consider these findings as parts of a collective picture (whereas the papers are more restricted in scope, with Paper 2 considering the generalizations for verb placement and Paper 3 for subject placement). Given the child productions as part of a unified picture, I will suggest how to describe the learner, as well as outline an analysis that captures children's development as summarized above (in the opposite order). In this analysis, I suggest that children learn the relevant syntactic analyses using a type of conservative strategy in which they start out postulating only the low negation, and later postulate a high negation and the subject placement and verb movement that follows it.

6.2.1 Developing two positions for negation

Section 2.1.2 showed that in Norwegian, negation may adjoin to two different structural positions: VP and TP, i.e. a high and a low negation. This accounts for all three word orders in embedded clauses (Neg-V, V-Neg and Neg-S), without assuming a VP-internal subject in Neg-S sentences. Acquiring the two positions for negation in Norwegian is likely to be challenging for children, since the form of the negation is identical in both positions. This is unlike what is found in other languages with more than one position for negation, such as the French discontinuous negation *ne pas*, where *ne* is structurally higher and *pas* structurally lower (e.g. Pollock, 1989) and the two forms differ phonologically. I suggest that Norwegian children might have difficulty separating the two positions, which may explain some properties of the acquisition trajectory for embedded clauses with negation. The potential consequences for children's early grammars should be investigated further.

Acquisition trajectory for subjects and negation

In this section, I use children who gave categorical responses (either S-Neg or Neg-S) as the basis for describing what children's acquisition trajectory of subject and negation positions likely looks like. By using these children's productions, we can view the data in an idealized manner, minimizing the presence of 'noise', essentially inspecting a child language user's idealized competence (following Chomsky, 1965). The 'categorical' children's production of subjects resembles a U-shaped curve when viewed over time. Initially, the categorical children only used the S-Neg order. Slightly older children only used the Neg-S order. Finally, the oldest children only used the S-Neg order. This U-shaped curve can be explained by children learning different positions for negation while entertaining an intermediate hypothesis of only one subject position – the one in the specifier of TP.

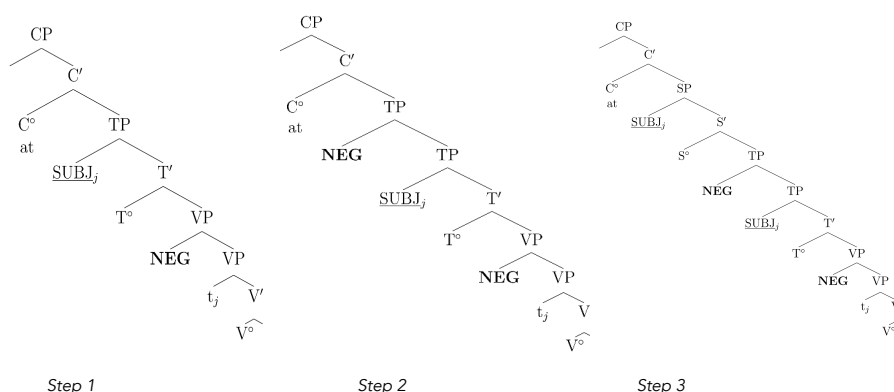


Figure 6.1: *The three steps of children's development of negation and subject positions in embedded clauses, as described in the text. The structures only highlight positions for negation and subject, and verb movement is therefore excluded. Even though subject placement was discussed relative to a high negation in Chapter 2, the low negation is included in the final step in this figure (step 3), to make clear that the low negation is still a part of children's grammar even after they postulate and start using the high negation.*

Since children's first productions are S-Neg and the lowest available position for negation is adjoined to VP, it follows that their first hypothesis about the target grammar (at least the first that can be observed in the present data) is that the subject must move. This hypothesis follows the target language's requirement that subjects move out of VP, as addressed in Chapter 2. If children make minimal assumptions concerning movement (as within an economy approach, e.g. Westergaard 2009), the subject at this initial stage is likely to have undergone movement only to SpecTP. The S-Neg order is then a result of children using the low adjunction site for negation. Step 1 in Figure 6.1 illustrates children's first hypothesis about subject and negation placement.

The next step in children's productions is the Neg-S order. Since the child already has (correctly) hypothesized that subjects move out of SpecVP to SpecTP, Neg-S order requires a position for negation above SpecTP (see step 2, Figure 6.1). Evidence for a high position for negation may come from different clauses and sentence types: First, direct evidence comes from embedded clauses with the Neg-S order. However, these structures are relatively rare in the child's input. Other sources of evidence could come from: *i*) matrix questions with negation, as in (9); *ii*) non-subject initial main clauses with negation (10a); or *iii*) embedded clauses with topicalization/fronting (10b).

- (9) Spelte **ikkje** musikklæraren xylofon i går?
 played not music.teacher.DEF xylophone yesterday?
 'Didn't the music teacher play the xylophone yesterday?'
- (10) a. I går spelte **ikkje** musikklæraren xylofon
 yesterday played not music.teacher.DEF xylophone
 'Yesterday the music teacher didn't play the xylophone.'
 b. Eg såg at i går spelte **ikkje** musikklæraren xylofon
 I saw that yesterday played not music.teacher.DEF xylophone
 'Yesterday I saw that the music teacher didn't play the xylophone.'

Confirmation that a high position is needed for Neg-S order (as opposed to having the subject stay in SpecVP) could come from clauses where negation and adverbs are found on both sides of the subject, as illustrated in (11). If adverbs like *nødvendigvis* sit above VP, then sentences like (11) show that the subject in Neg-S clauses has, in fact, moved out of VP.

- (11) I går såg eg at **ikkje** musikklæraren **nødvendigvis** spelte
 yesterday saw I that not music.teacher.DEF necessarily played
 xylofon
 xylophone
 'Yesterday I saw that the music teacher didn't necessarily play the xylophone.'

The acquisition trajectory suggested here seems to resemble how children acquire several positions for negation in other languages that have this property. In French, children initially only use the lower negation *pas* (e.g. Meisel, 1997), and in Korean, children are found to use only one of two available negations until around age 3;5 (Hagstrom, 2002).

The last step in children's production is using the S-Neg order again. This could potentially be a result of the same analysis as in step 1, where the subject is in SpecTP and the low negation site is used. However, since this is children's final analysis, it will be the one that converges on the target grammar, i.e. the analysis in the adult grammar. As outlined in Chapter 2, the adult grammar is argued to distribute subjects in two different positions, based on the observation that subjects preceding and following negation are

distinguished by certain features such as subject type and specificity. The high subject position precedes high negation and the low subject position follows it. Following this, children's final analysis of S-Neg must be subject raising across negation adjoined in the high position (see step 3, Figure 6.1).

Note that in the adult grammar, the low negation position is still available. In Section 2.1.2, I mentioned how two subject positions and a high negation could cause ambiguity in Neg-V clauses. Such clauses have the subject preceding negation, and given standard assumptions of a low negation position as a diagnostic of *V in situ* (e.g. Holmberg and Platzack, 1995) as well as standard assumptions of two subject positions on either side of a high negation (e.g. Holmberg, 1993; Westergaard, 2011), the result is ambiguous: It cannot always be determined whether S-Neg-V is a result of a high subject (in SpecSP) combined with a high negation, implying that negation is not a certain diagnostic for *V in situ*, or whether it is the result of a low subject (in SpecTP) combined with a low negation. The position of negation is generally not an issue, since studies are typically concerned with subject positions or verb movement relative to negation in isolation. Since this cover article considers both in a holistic picture, the possible issues of two negation positions combined with two subject positions and no verb movement become visible. To my knowledge, this is the first work pointing out these ambiguities with respect to the position of negation, as well as the possible learnability issues these ambiguities might create (see below). For clarity, and to follow standard assumptions, in this discussion I restrict my attention to high negation when considering subject positions, and low negation when considering Neg-V (as will become clear in Figure 6.2).

In order to learn the two subject positions, children need to encounter subjects preceding and following negation, and learn that there are different features connected with the two. Also here, direct evidence comes from embedded clauses with the S-Neg and Neg-S orders, as the two orders must be viewed in comparison to discover the differentiating distribution of the subject. This is illustrated in (12). However, additional evidence could also come from subject distribution relative to negation in main clauses, shown in (13). While the distribution of subjects in main and embedded clauses is not identical in terms of frequency (the low position is much rarer in embedded clauses), it may be similar in terms of licensing factors (new/given information). Children may therefore use Neg-S and S-Neg in main and embedded clauses as evidence for how subjects are distributed in embedded clauses.

- (12) a. Eg såg at han **ikkje** spelte xylofon
 I saw that he not played xylophone
 'I saw that he didn't play the xylophone.'
- b. Eg såg at **ikkje** musikk læraren spelte xylofon
 I saw that not music.teacher.DEF played xylophone
 'I saw that the music teacher didn't play the xylophone.'

- (13) a. I går spelte han **ikkje** xylofon
 yesterday played he not xylophone
 'Yesterday he didn't play the xylophone.'
- b. I går spelte **ikkje** musikklæraren xylofon
 yesterday played not music.teacher.DEF xylophone
 'Yesterday the music teacher didn't play the xylophone.'

While the structure in step 1 is not similar to the target analysis, step 2 and 3 correspond to adult analyses of low and high subject positions respectively, meaning that when children reach an adult-like state, their grammar comprises both these analyses. Since children do not use the analysis from step 1, they must abandon it at some stage. Above I suggested that this reanalysis was caused by children having encountered sufficient evidence for two subject positions. This is likely to happen through an interaction of frequency and complexity. As for frequency, embedded clauses with negation are very rare in adult speech, meaning they are rare in children's input. Only 0.45% of adults' utterances involve embedded clauses with negation (Paper 1). There are three possible word orders in such clauses, distributed in the following proportions (numbers from Papers 1 and 3): S-Neg-V is used in 60,3%, V-Neg is used in 29,6% and Neg-S is used in 10%. Since children so rarely see the two subject positions in embedded clauses in their input, it must take time for them to build a reasonably sized data set in which they can see that the two are distinguished by certain properties (subject type and discourse-relevance). As for complexity, children's ability to discover the the complexity of the two positions is likely not just related to needing to build up sufficient experience with them, but also to their ability to perceive the relevant distinctions. Section 6.3.2 treats input, intake, frequency and complexity further.

Although the stepwise presentation of this acquisition trajectory might suggest abrupt transitions between two grammars, it is likely that there are gradual shifts between each step in which the child considers (at least) two possible grammars, as suggested by e.g. Roeper (1999); Yang (2002). The different grammars displayed as parts of different steps, or phases, in Figure 6.1 and in the prose above thus temporarily co-exist. The seemingly abrupt shifts in Figure 6.1 are more likely to reflect that the U-shaped trajectory is the result of different participants' production in a cross-sectional study, rather than a longitudinal study of a few individuals' development. For children who use both word orders, they seem to be entertaining two grammars: One where the subject is placed relative to the low negation and one where it is placed relative to the high negation. However, some of these children seem to be target-like, and are therefore not (actively) entertaining the grammars from earlier steps as part of the target-grammar inventory.

A similar trajectory might also take place in main clauses. In longitudinal data in a corpus of three children (Anderssen, 2006), the general pattern in children's subject production is that they prefer to use the low subject position more than in the adult grammar. Nevertheless, the first relevant occurrences of subject placement are with a high subject, not with a low one (see Anderssen and Westergaard, 2010; Westergaard, 2008, 2011). This

might indicate that children also start out using only the subject position in SpecTP and the low negation in main clauses, before utilizing the high negation and finally also the higher subject position. While the occurrences of an initial high subject placement in main clauses are few, if such a development holds for a larger dataset it suggests that children are hesitant in their postulations of structure: Even though they first learn that some structure is found in main clauses (in this case, high negation and subject-movement past this negation), they do not automatically assume the same structure for embedded clauses. This is in accordance with the micro-cue model (Westergaard, 2009), in which children are argued to entertain hypotheses that make fine distinctions between clause types.

The developmental path from S-Neg to Neg-S to S-Neg seems to follow both from the complexity of the structure and the frequency of high and low subjects in children's input. If we assume that more structure is more complex, the adult analysis of high subjects is more complex than children's initial analysis of one subject position. Thus, what we see here is children's acquisition trajectory from a less complex to a more complex structure. Given that children are able to parse and produce more complex features of their target language as they get older, this seems to be a completely natural development. As for frequency, both in main and embedded clauses, the low position is the less utilized one, so it is less frequently attested in children's input than the high position. If our idealized picture above holds true of children's placement of subjects in general and they start out using the subject preceding lower negation, this also seems likely to be a frequency effect, in that they initially only use the word order for which they have a large amount of evidence. Along a similar vein, the later onset of Neg-S in children's production seems to reflect the even lower frequency of this word order in their input.

Acquisition trajectory for finite verb and negation

We now turn to how the suggested analysis of children first postulating only the low negation, and later also the high negation, can be transferred to their production of verb placement relative to negation. If it is the case that the two available negation positions develop in this way, we should also see the effects of this development on generalizations about verb placement.

The present data show that children initially overuse V-Neg compared to adults, meaning both that they use the V-Neg order more in environments allowing it in their target language and that they use it in illicit environments.

As for children's initial overuse of V-Neg, given that the lowest possible adjunction site for negation is above VP, to achieve the V-Neg order, the verb must be moved out of VP. Given that children initially only postulate the low negation, as suggested above, their initial analysis of V-Neg is likely V-to-T movement with a low negation (see step 1, Figure 6.2). This is also the necessary, and only possible, movement that produces the correct configuration with the subject, which was argued above to be in SpecTP during the first steps. An initial analysis such as this involves a simple structure, comprising the

CP, TP, and VP layers. In order to reach an adult analysis, which is displayed in steps 3a and 3b in Figure 6.2, the initial analysis must be refined to include the possibility of a high negation as well as a recursive CP.

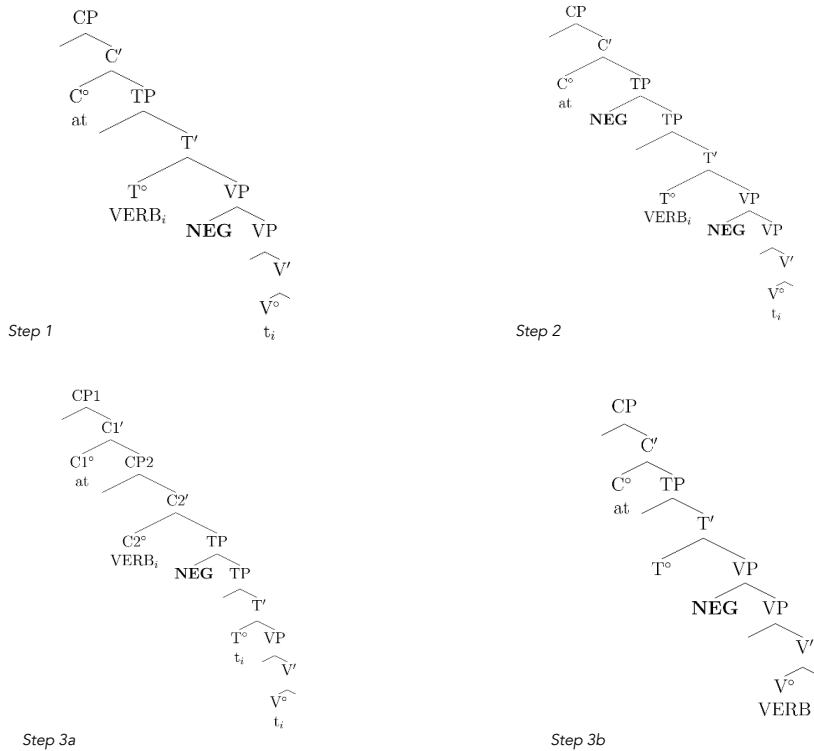


Figure 6.2: The three steps of children's development of negation and verb positions in embedded clauses, as described in the text. Subjects are not included in the structures of this figure, since the purpose here is highlighting the positions of verbs and negation. The structure in step 3a utilizes a recursive CP introduced in Chapter 2 as a non-detailed illustration of the C-domain, necessary to encompass the main clause word order V-Neg in embedded clauses. As discussed in Chapter 2, the position of negation is in fact ambiguous in both V-Neg, step 3a, and Neg-V, step 3b. Here, a low negation is used with Neg-V, following common assumptions, and a high negation with V-Neg for illustration.

The proposal that children's initial hypothesis of verb movement past negation is V-to-T movement is in line with Westergaard and Bentzen (2007)'s analysis of children's overuse of V-Neg. According to Westergaard and Bentzen (2007), children's first analysis of V-Neg in main clauses, illustrated in (14), is that the verb has undergone movement to T instead of C, as in the adult grammar. As discussed in Chapter 2, the T head is an intermediate stop in adults' verb movement. The short verb movement in children's

early grammar is caused by a principle of economy of movement, in which children undertake the shortest move compatible with their input data. Westergaard and Bentzen (2007) further suggest that the T-domain is identical across clause types, so the default assumption is that the same movement also takes place in embedded clauses, resulting in embedded V-Neg.⁴ This analysis seems incompatible with the claim above, that children pursue different hypotheses for main and embedded clauses early on, and I discuss this in more detail in the next section.

- (14) Musikklæraren *spelte* **ikkje** xylofon i går
 music.teacher.DEF played not xylophone yesterday
 ‘The music teacher didn’t play the xylophone yesterday.’

Children also use the Neg-V order early on. Here, I will treat V-Neg and Neg-V as two separate steps in children’s developing grammars, but just as discussed for the trajectory of subject and negation placement, they must co-exist for some time, since most children use both word orders at the same stage of development (in one experiment). For the trajectory of learning subject and negation positions, the suggestion was that children initially use only one subject position, in SpecTP, and that their variable word orders, S-Neg and Neg-S, were the result of them using the low or the high negation instead of moving the subject to a higher position as in the adult grammar.

Given that children are refining their hypotheses about relevant target-grammar structures to include a high position for negation due to evidence from the Neg-S order, and that children initially assume V-to-T movement as the cause of the V-Neg structure, there is also a logical possibility that the variation between V-Neg and Neg-V is caused by the use of the two different negation positions, rather than a difference in verb movement. Such an alternation is on a par with the initial variation between the S-Neg and Neg-S orders. To further explain, there are two ways to generate the surface order Neg-V: Either the verb stays *in situ* and either negation site is used, or the verb undergoes V-to-T movement and the high negation site is used. Thus, if children have a generalized hypothesis about V-to-T movement, using the low negation would result in V-Neg, and correspondingly using the high negation would result in Neg-V (see step 2, Figure 6.2).⁵ It is, however, not clear that it will be possible to unlearn such an analysis, and if it is unlearnable, it is also unlikely that children will ever entertain it as a possibility.

⁴In the next section, 6.3, I will not view the transfer of verb movement generalizations as happening due to lower domains being identical across clause types. I will rather view it as a transfer from main clauses to embedded clauses due to children’s much longer exposure to main clauses than embedded clauses, i.e. children are able to perceive and parse main clauses before embedded clauses. This ensures that generalizations cannot be made in lower domains from embedded clauses to main clauses, which could result in children also using the Neg-V order in main clauses, a behaviour I have not seen attested in the literature.

⁵This relates to the issue of how children move from using only one subject position to using two, when they could in fact use the same subject position while varying which adjunction site they use for negation, as this would give the same S-Neg/Neg-S alternation.

Furthermore, if children assume that the analysis of Neg-V is high negation plus V-to-T movement, this would involve the subject moving out of SpecTP across negation to the higher subject position, since the subject precedes negation in this word order. Above, children were argued to be restrictive with subject raising, another factor raising doubt as to whether children ever entertain this analysis of Neg-V. The high negation may also be postulated here due to children's awareness of the relevant evidence in (9)-(13). I do not commit to one analysis or the other, but the possible learnability problems caused by interactions between having two negations and V-to-T movement are raised here as an issue that should be investigated further.

The initial analysis that V-Neg is caused by V-to-T movement does not coincide with the adult grammar. Such structures therefore need to be re-analyzed so the child ends up with a grammar including the options V-to-C and V *in situ* (steps 3a and 3b respectively in Figure 6.2). There are two main ways in which this may happen, which are interrelated. First, the child learns that Norwegian employs generalized V-to-C movement, which is especially visible in non-subject-initial clauses since the subject in general occupies a high specifier position below C. Thus, any verb preceding the subject must have undergone V-to-C movement, illustrated by (15a) (main clauses) and (15b) (embedded clauses). Assuming generalized V-to-C movement, the child would learn to undertake this move with verbs preceding negation as well.

- (15) a. I går *spelte musikklæraren* xylofon
 yesterday played music.teacher.DEF xylophone
 'Yesterday the music teacher played the xylophone.'
- b. Eg såg at i går *spelte musikklæraren* xylofon
 I saw that yesterday played music.teacher.DEF xylophone
 'I saw that the music teacher played the xylophone yesterday.'

Second, shifting from a V-to-T grammar to a V-to-C/V *in situ* grammar, children can notice that verbs follow negation in embedded clauses (Neg-V). The shift from a V-to-T grammar to a V *in situ* grammar is suggested to be invoked by the Neg-V order in embedded clauses both by Westergaard and Bentzen (2007) and Heycock and Wallenberg (2013).⁶ Given that the possibility of two negation positions potentially causes problems for children with respect to whether to use the high or low position and whether to posit verb movement or not, they need to encounter evidence that the correct analysis is low negation and no verb movement (following standard assumptions about the adult grammar; see Chapter 2). Such evidence could come from embedded clauses containing adverbs in addition to negation. If the adverb precedes negation, negation must be in the

⁶Heycock and Wallenberg (2013) address the issue of why V-to-T movement has been lost in Scandinavian and how this relates to acquisition. They argue that a V *in situ* grammar (which also entertains the possibility of V-to-C movement) eventually wins over a V-to-T grammar due to having a better fit to the data (using the variational model of Yang 2002). Also in this proposal, an embedded Neg-V clause displays unambiguous evidence for V *in situ*. Additionally, the possibility of V-Neg in some clauses is evidence of V-to-C movement.

low position, and correspondingly the verb must be *in situ*, as illustrated in (16).

- (16) Eg såg at han **nesten ikkje** spelte xylofon i går
 I saw that he almost not played xylophone yesterday
 'I saw that he almost didn't play the xylophone yesterday'

If children use Neg-V as shown above as evidence to disregard the V-to-T grammar, they turn to an option of a grammar consisting of V *in situ* as well as V-to-C, comprising a rule such as 'in embedded clauses the verb either moves to some head in C, or not at all'. It also seems children stop using the grammar with the V-to-T-analysis, as they leave their initial rudimentary structure in favour of a more expanded, complete structure that can encompass the embedded V-to-C-movement.

Learning about children's acquisition of negation positions

Above, I have pointed out that retraction from from an incorrect initial hypothesis may be problematic for children, in particular if their first hypothesis for how to generate Neg-V is the result of V-to-T movement and a high negation. It is not entirely clear how they could then learn that the target analysis is V *in situ* and low negation.⁷ A related issue is how children move from using only one subject position to using two, when they could in fact use the same subject position while varying which adjunction site they use for negation, as this would give the same S-Neg/Neg-S alternation. Above we speculated that this may happen through children becoming aware of the distribution of different features across the two subject word orders. Since negation in both positions in Norwegian has the same form, it is in many cases impossible to say, both for the linguist and for the child, which one is at play. I will not attempt to solve this puzzle here, but will point out two directions that could yield potential answers.

To understand children's development and acquisition of correct negation positions, one could look for scope relations or co-presence of negation and other adverbs. The evidence from scope relations follows from Eide (2002). She proposes two adjunction sites for negation, and argues that each site has different scope interactions with modals, illustrated in (17a) and (17b) (Eide, 2002, 227)

- (17) a. Dermed kan medisinen **ikke** virke
 thus can medicine.DEF not work
 'Thus, the medicine can not work.' (ambiguous: It is possible for the medicine not to work/It is not possible for the medicine to work)
- b. Dermed kan **ikke** medisinen virke
 thus can not medicine.DEF work
 'Thus, the medicine cannot work.' (unambiguous: It is not possible for the

⁷A disclaimer here is that it is not clear that Neg-V in the adult grammar uses the low negation. It could also be an instance of high negation, as discussed in the preceding section.

medicine to work)

Thus, investigating Norwegian children's sensitivity to these scope interactions and comparing it to the developmental trajectory of the full clausal structure as suggested here can show whether the two correlate.

The evidence from adverbs follows from Holmberg (1993) and the observation that negation and adverbs can be found on each side of the subject. Investigating children's ability to place subjects following negation but preceding an adverb would for example demonstrate use of a high negation. An example of this is shown in (18). Having the subject preceding negation and an adverb, as in (19), would also show that the high negation was used. On the other hand, utterances with the order subject - adverb - negation, as in (20), would show that the low negation was in use. Scope relations and the presence of multiple adverbs would provide indirect evidence for the position of negation in Neg-V/V-Neg clauses.

- (18) I går såg eg at **ikkje** musikklæraren **nødvendigvis** spelte
 yesterday saw I that not music.teacher.DEF necessarily played
 xylofon
 xylophone.DEF
 'Yesterday I saw that the music teacher didn't necessarily play the xylophone.'
- (19) I går såg eg at musikklæraren **ikkje** **nødvendigvis** spelte
 yesterday saw I that music.teacher not.DEF necessarily played
 xylofon
 xylophone.DEF
 'Yesterday I saw that the music teacher didn't necessarily play the xylophone.'
- (20) I går såg eg at musikklæraren **sannsynlegvis** **ikkje** spelte
 yesterday saw I that music.teacher probably not.DEF played
 xylofon
 xylophone.DEF
 'Yesterday I saw that the music teacher probably didn't play the xylophone.'

Brief summary and implications

Studies of subject and verb placement relative to negation typically focus on subject or verb movement, respectively, and not negation. Since the two studies of children's production in this dissertation can compare the developmental patterns of both verb and subject placement, it is able to offer a new perspective on how children's postulation of only low negation might interact with what they hypothesize for subjects and verbs. Since this view on acquisition of subject positions, verb movement and negation positions has taken a holistic approach, it has also been able to point out the ambiguity

and possible learnability issues that follow in embedded clauses with the S-Neg-V order, given standard assumptions that there are two negation positions and two subject positions in the target adult grammar of Norwegian.

The developmental trajectory suggested here is compatible with accounts suggesting that children are economical in their approach to the target language's syntax (as will be discussed below). As the outline above has shown, using only the low negation entails that children move both subjects and verbs to the closest position, as is suggested by e.g. Anderssen et al. (2010) and Westergaard (2011) and the present Paper 3 for subjects, and by Westergaard and Bentzen (2007) for verbs. The pattern emerging in the development shown above is that children prefer to limit hypotheses to movements in the lower T domain, i.e. low structural positions.

6.3 Describing the learner

The development we see in the figures above, as well as the general findings of children's productions in the present studies, can be described as an interaction between two factors working together: *i*) An intrinsic approach to acquisition that has a conservative nature, causing the learner to have a preference for low structural positions and small rules; and *ii*) Growing intake and rule components, as a result of children's increasing ability to perceive complex structures as well as an increased amount of representations of relevant structures.

This section will treat these two factors in turn. As part of *i*), I will discuss children as conservative learners, economy in syntax, and learning of fine-grained rules in combination with larger generalizations. As part of *ii*), I will discuss the roles of frequency of relevant input data and the complexity of the structures under scrutiny.

6.3.1 Intrinsic conservative tendencies

Preference for low positions

As shown in the acquisition trajectories above, children's initial grammars seem to deviate from adults' in that they make use of lower positions: Where the adult grammar contains verb movement to C, children make an intermediate stop at T in their first hypotheses, and where the adult grammar contains a high subject position in SpecSP and a low subject position in SpecTP, children prefer the subject in SpecTP for some time. Additionally, children start out assuming the existence of a low negation, then later also posit a higher negation. Since this is not the grammar children eventually converge on (assuming that they do converge on the correct adult grammar), it seems that children initially hypothesize a grammar that is the result of some inherent bias.⁸ I follow Westergaard (2009) in the view that this is some bias towards economy. For Westergaard (2009,

⁸Note that for negation, I assume that the grammar children converge on contains the possibilities of both the high and low negation positions.

216), economy is only moving 'elements as far as there is evidence for in the input'. In the following I also consider what an economical approach entails when children seem, for some time, to limit hypotheses to the domains lower than C, as in the case of verb movement.

I will first address an important issue related to the observations that children initially operate only in domains below C. Can children's lack of movement to C be related to their C-domain being non-existent or less developed (as in e.g. Platzack, 2001; Radford, 1988)? The present data do not support such a view. Since children in the studies of Paper 2 and 3 are able to use embedded clauses with complementizers, a C head must be present in children's grammars at least from age 3. Additionally, the children in the present studies seem to have fine-grained control over what the C-domain contains, as they are able to distinguish clauses that are claimed to have a more and less extended left periphery (e.g. Julien, 2015). It is, however, possible that children's initial C-domains are somewhat simplified as compared to those of adults. As the developmental trajectories in the previous section suggest, embedded V-to-C movement involving a recursive CP, seems somewhat delayed. I speculate that children's initial C-domains in embedded clauses are mostly used for clause typing, typically involving various complementizers.

For an economy-based account of children's overuse of the low subject position, the reasoning is relatively obvious: Less movement is involved in moving a subject to a lower position than to a higher position. This is also argued in Paper 3, and previously in Westergaard (2008); Anderssen et al. (2010) regarding children's preference for low subjects and objects. Children therefore prefer to use the low position as long as possible, meaning until they have encountered a sufficient amount of evidence. Section 6.2.1 showed that the low subject position is in fact highly infrequent in children's input, meaning they most often encounter evidence of the high position. The infrequency of the low position combined with children's overuse of it seems to reinforce the notion that children have an intrinsic bias towards less movement.⁹

As for children's overuse of verb movement, it seems counter-intuitive from an economical perspective, since they are positing movement even though the target grammar requires none (in embedded clauses). However, as pointed out above, this was argued by Westergaard and Bentzen (2007) to be the result of children's lack of movement in main clauses: V-Neg in main clauses is initially misanalyzed as V-to-T movement, and this hypothesis is carried over to embedded clauses. Since this explanation is not strictly economical for embedded clauses, it must be viewed through the lens of what children use as evidence, which is again dependent on what they are able to perceive from their input, as will be discussed below.

⁹Additionally, children's lasting overuse of the infrequent position may reflect the overall infrequency of embedded clauses with negation.

Learning small rules, forming larger generalizations

The data from children's production have shown, consistent with the view of acquisition in Westergaard (2009, 2014), that children make fine-grained generalizations about their target language from early on. Thus, in this view, children's small rules are reflected in their initial productions of given structures. An alternative sketched out in Chapter 3 was that children could start out with large generalizations, or default rules, before making exceptions (e.g. Yang, 2002). In Paper 2, children used the V-Neg order at different rates across different clause types. This was interpreted as evidence that children make separate generalizations for very fine-grained clause types, i.e. clause types that are not only syntactically distinguished, but also distinguished by their discourse-pragmatic relevance. In the previous section, I also pointed out that children seem to have similar acquisition trajectories in main and embedded clauses regarding subject placement, but that they go through each of these trajectories at different times in development. This also suggests children make separate generalizations for main and, later, embedded clauses. In Paper 3, children used the Neg-S order to different extents according to subject type from around age 3, before reaching target generalizations. Similar to the V-Neg study, this suggests that children make different generalizations for different subject types.

However, it also seems that children entertain rules for fine-grained clause types in tandem with broader hypotheses about the target grammar, i.e. a set of more abstract knowledge (see e.g. Kemp et al., 2007; Pearl and Goldwater, 2016), or larger generalizations. As described throughout the previous section, it seems children might use a variety of environments as evidence for the high negation, for example, which seems to reflect that children are collecting evidence of possible structures in their target grammar. The fine distinctions children make with respect to smaller clause types then seem to show that they are considering whether a certain structure they know to be possible in their target grammar is appropriate in a certain clause type or environment.

With respect to the acquisition trajectories outlined in the previous section, this must mean that even though each step (as illustrated in Figures 6.1 and 6.2) is considered in each clause type or for each subject type, there is an interaction with the aggregated abstract and general knowledge regarding the inventory of possible forms or syntactic building blocks in the target grammar.

A somewhat conservative learner

The two previous sections have argued that children postulate less movement than is found in the target language, and they postulate hypotheses for small environments instead of working with large rules that would lead to large leaps towards the target grammar, later requiring a large retraction.¹⁰ It therefore seems fitting to characterize

¹⁰This does not contradict the observation above, namely that children must be working with smaller rules and larger, abstract generalizations simultaneously, since I suggested that the larger generalizations are tested in small environments.

this learner as one with a conservative nature. A conservative learner was described in Chapter 3 as one who does not build syntactic structure unless given evidence to do so, and does not posit movement without sufficient evidence for it (following Westergaard, 2009). It was also described as the child posing the smallest hypothesis compatible with the data encountered in the input so far.

However, the learner outlined here *does* pose hypotheses that are incompatible with input data. The child will never encounter V-Neg in relative clauses in her input, but nevertheless hypothesizes the possibility of this word order. Additionally, the learner does move elements further than she is given evidence for, if one considers the overgeneralization of V-to-T movement from main clauses to embedded clauses. An absolutely conservative learner would not make generalizations for embedded clauses before encountering the relevant generalizations in her input. Thus, even though the learner here moves in small steps towards the target grammar and prefers operating in low domains, she cannot be characterized as strictly conservative. For this reason, I define the learner here as having conservative tendencies or a conservative nature, but not being strictly conservative. This deviates somewhat from Westergaard (2009), and aligns with Snyder (2007)'s view of children as displaying conservative *tendencies*.

It seems that the issues related to characterizing a learner as conservative are (among other things) related to the notions of 'small' and 'large' rules and steps in acquisition: What does 'small' mean, and how small can a step, hypothesis or grammatical extension be while still constituting a rule rather than an idiosyncrasy? And furthermore, how large is a non-conservative hypothesis? While these questions will not be answered here, they should be noted as important in future investigations. It seems that any rule that is not idiosyncratic may fail.¹¹

6.3.2 Increasingly sophisticated intake and rules

The previous section addressed the likely cause of children's initial grammars, namely a preference for low positions. This section will address how their grammars develop from the initial state(s).

In Chapter 3 I discussed children's input, and claimed that it is highly unlikely that a child is able to perceive and make use of her total amount of input. Thus, the question is *which* parts of it is the child able to perceive and use to form hypotheses about her target language. Here, I will address this question in terms of complexity and frequency.

First, frequency. The aggregated data from adults language in this dissertation have established that embedded clauses with negation are rare in adult speech. In Section 6.2.1 I

¹¹An additional point for discussion in future research is that of defining conservatism. In Chapter 3, I mentioned that there are two ways of viewing conservatism: One way is that conservatism means proceeding in small steps (Westergaard, 2009; Snyder, 2011), and the other is that conservatism means looking for larger, default rules first (Yang, 2002). This is an important clarification both for how the terminology is used in the field, and for understanding the nature of a conservative acquirer.

showed through production numbers from the corpus studies in Papers 1 and 3 that only 0.45% of adults' total speech is embedded clauses with negation, and that these clauses in turn display word orders in the following proportions: Neg-V is used in 60,3%, V-Neg is used in 29,6% and Neg-S is used in 10%. It follows from the scarcity of these clauses in children's input that they do not encounter them often. Relatedly, child-directed speech (CDS) typically contains simpler sentences (a shorter mean length of utterance; e.g. Newport et al. 1977) and fewer embedded clauses than adult language (Huttenlocher et al., 2007), indicating that CDS likely contains even fewer embedded clauses with negation than adults' general production. Given that children form hypotheses about their target language based on at least a small dataset, I take the infrequency of relevant data to mean that it takes some time before children have encountered a sufficient number of clauses to hypothesize over. 'Some time' is a vague notion that I do not have grounds to define here, but importantly, children must have encountered enough relevant data to hypothesize over before age 3. However, it seems likely that the infrequency of relevant evidence in their input is a contributing factor to the late acquisition of embedded clause generalizations. Importantly, since children overuse the less frequent word orders, they do not simply frequency-match structures from their input, another argument supporting the existence of an intrinsic bias (an inherent conservative tendency). It also seems that the child needs time to encounter a sufficient amount of relevant structures in order to unlearn, or retract, initial incorrect hypotheses, since it takes (at least) a few years for children to move from their initial grammar to the target.

Encountering relevant clauses in the input is, however, not sufficient for children to acquire them. They must also be able to perceive, understand and parse them. This relates to children's ability to deal with complexity. Chapter 3 addressed that children might not be able to perceive complex clauses at every stage of their development (as implicitly also follows from e.g. Lightfoot 1989's degree-0 model). This likely relates to issues such as learning lexical semantics, but also suggests that learning grammatical rules happens incrementally, so that the child's ability to parse more complex structures increases with the level of complexity that she already knows and understands (see Lidz and Gagliardi, 2015, for the latter).

If children initially only perceive simple clauses, it is possible that they transfer their generalizations from simple to complex environments at an early stage, i.e. they use main clauses as evidence for the rules of embedded clauses. This is precisely what was assumed above for the overgeneralization of V-Neg in embedded clauses: The first steps included the verb moving to T, as was suggested by Westergaard and Bentzen (2007) to be caused by children initially misanalyzing verb movement in main clauses as V-to-T movement, and then transferring this analysis to embedded clauses. Transfer of main clause generalizations to embedded environments is also suggested by Pozzan and Valian (2016). In a large scale study of children's embedded questions in English, they find that inversion errors appear in such clauses. Children produce embedded questions such as 'She wanted to know what was her brother cooking', on a par with the word order in main questions (following up on observations in Stromswold 1990). According to them,

children's production suggests that they 'might use evidence from more frequent and syntactically simpler structures to inform their hypotheses about less frequent and more complex structures, overgeneralizing across levels of embedding' (Pozzan and Valian, 2016, 16).¹²

One question is whether this fits with the acquisition trajectory of subjects and high negation as witnessed in the present data. Even though I have thoroughly emphasized how children go through the same steps as they analyze main and embedded clauses at *different points in development*, I suggest that these data nevertheless are compatible with children having based their hypotheses for embedded clauses on main clauses. To present the suggestion, we need to address a few aspects of V-to-T movement. An important point is that when it comes to the overgeneralization of verb movement, the present data clearly show that there is no generalized hypothesis that all embedded clauses have V-to-T movement. Rather, the data seem to reflect that children entertain different hypotheses for different embedded clause types. One could speculate that they are unlearning an initial assumption of generalized verb movement, clause type by clause type. Another important point is that children are not transferring their final analysis of main clauses, but their initial analysis, to embedded clauses. It is possible children are doing the same with subject placement. Section 6.2.1 discussed that children go through the same development with subject placement in main and embedded clauses. The initial step of this trajectory was described as having subject raising to SpecTP. Since this is the initial step for main clauses, children could be transferring it to embedded clauses, thereby starting out with subject raising to SpecTP in embedded clauses also, yielding the S-Neg order. For high subjects the initial analysis will be gradually unlearned, to end up with subject raising to SpecSP, as found in the adult grammar.

Section 6.2.1 mentioned that an analysis where V-to-T movement was transferred between clauses seemed incompatible with the claim that children pursue different hypotheses for fine-grained clause types (following the micro-cue model of Westergaard 2009). However, what I have discussed here is that children's ability to perceive and hypothesize over complex clauses grows and becomes more sophisticated following an incremental revision of their mental grammar and a growing database of relevant evidence in their input. Even though children at an early stage use main clause generalizations as evidence for embedded clauses, the present data suggest that already around age 3, they are gradually unlearning their initial hypotheses on the basis of fine-grained clause types. Thus, their lingering overuse of V-Neg is not counter-evidence of their sensitivity to detail, but a result of the remains of their initial generalizations, which do not abruptly

¹²Children transferring main clause generalizations to embedded clauses is not a general truth – research on inversion of subject and verb in embedded questions (Westergaard and Bentzen (2007) for Norwegian and Heycock et al. (2013) for Faroese) shows that children only apply verb movement across negation (or adverbs) in embedded questions, but never past the subject. This is taken to indicate that children do not have a *general* assumption causing them to use main clause word order in embedded contexts. This seems to be the case also for the analysis of children's developing negation above, where they do not automatically carry their main clause analysis over to embedded clauses, but start out with the low negation in embedded clauses even though they are target like with the high negation in main clauses.

disappear as they become able to perceive more sophisticated distinctions.

Discourse-pragmatic understanding

An issue that also needs mentioning is whether children's production could be influenced by poor discourse-pragmatic understanding, by which I mean the ability to correctly assign the status of a referent or proposition as being new or given in the discourse. This is relevant since both subject positioning and verb movement are related to discourse-pragmatics. For example, if children are not able to make use of the full potential of the C-domain, which is where the clause is contextualized, this might cause non-adult like production. Although it is possible that some delay in mapping meaning and form results in children's overuse of the exceptional word orders (a speculation that should be followed up in future research), the present findings do not support the notion that generally poor discourse-pragmatic understanding is the cause of children's non-adult-like production.¹³

When children have a non-adult-like preference for one of two available options, this is not uncommonly suggested to be a result of children assigning referents a different discourse status than adults. The typical claim is that children make mistakes in the direction of assuming familiarity. That is, they will assume that a referent is known to their interlocutor, even though it is not. For example, low (unlike high) objects in Dutch express given information, and children's overuse of low objects is suggested to be caused by their overeager assumption of familiarity (Schaeffer, 2000). Similarly, *in situ wh*-phrases (unlike fronted *wh*-phrases) in French involve a familiar (or 'backgrounded') referent, and children's overuse of *in situ wh*-phrases is argued to be caused by their overly inclusive assumption of what is part of the common ground (Gotowski and Becker, 2016).

For three main reasons, this does not seem to explain the data on children's production of Norwegian embedded clauses. First, if children interpret new information as given and overuse the word order option expressing familiarity, this would predict the opposite behaviour from what children in the present studies are displaying. The present data show that children overuse the word orders expressing new information (V-Neg and Neg-S), not familiar information. If children's production were caused by a lack of discourse-pragmatic understanding as described above, we would expect them to assume familiarity when they should not, thereby overusing the Neg-V order. Thus, the assumption that children have an underdeveloped understanding of discourse new-ness and familiarity is not compatible with their production here. This point is made by Westergaard (2008) about subject positions and information structure, and is further confirmed by the present observations. Second, when comparing children's overuse of Neg-S in embedded clauses to main clauses, we see that children overcome their overuse of Neg-S in main clauses long before embedded clauses. This would be surprising if their produc-

¹³The issue of discourse-pragmatics was not explicitly tested in the child studies, but I nevertheless argue that children's non-adult-like production is not an effect of their underdeveloped discourse-pragmatic understanding. This issue is also addressed in Paper 3.

tion was caused by a poor discourse-pragmatic understanding, as we would then likely see subject placement fall into place in both clause types around the same age. Third, further support for this view comes from the systematicity in children's production. If children more or less randomly assigned beliefs of others' knowledge status, we would not expect to see rates of V-Neg varying systematically according to clause type, or Neg-S according to subject type (this point aligns with children's non-random production of low objects; see Paper 3 and Mykhaylyk and Ko 2010).

6.4 Summary

This chapter has examined all three word orders in embedded clauses – V-Neg, Neg-V and Neg-S – as part of a coherent picture, with the aim of gaining new insights. For adult language, this chapter has argued that both exceptional word orders, V-Neg and Neg-S, are used to convey discourse-new information. It was suggested that V-Neg expresses a discourse-new proposition, and Neg-S introduces a new referent. While the view of low subjects as new is the general perception in the literature, the account of V-Neg as new offers a novel perspective.

For children's production, this chapter has shown that the developmental trajectories of verb, subject and negation placement can be unified under one analysis, in which children first use only the low negation position before hypothesizing the high position as well. This analysis offers a new perspective on an old topic: Previous literature on verb and subject placement in Scandinavian child language typically has not addressed children's analyses of negation. The learner emerging from the present studies was summarized through the following features: The learner, due to children's natural development, initially uses simple clauses as evidence for complex clauses, but at an early age the learner starts unlearning her initial hypotheses based on fine-grained clause types. This can in some cases cause overgeneralization of structures that are licit in certain smaller contexts but not in others. In order to learn about structures and generalizations in the target grammar, the learner was suggested to use a variety of clause types to form more abstract generalizations, but nevertheless postulate hypotheses for small environments. The learner limits her hypotheses to low positions, and undertakes shorter moves for verbs and subjects than are found in the target grammar. Therefore, I characterized the learner as one with conservative tendencies, though not strictly conservative, and as somewhat economical.

Chapter 7

Final remarks and directions for the road ahead

This dissertation has focused on word order variation in embedded clauses from two main perspectives: How it behaves in adult language, and how children acquire it. The variation studied here is specifically that of verb and subject placement relative to negation in embedded clauses: Whereas the default ordering is Subject-Negation-Verb, some exceptional contexts allow the verb to precede negation (V-Neg), while others allow the subject to follow negation (Neg-S). The dissertation has pointed to the importance of understanding such conditioned variation both in adult language and children's acquisition. In the introduction, I listed four questions or perspectives that I used to guide the present work. In summing up the thesis here, I attempt to point out, in brief, how the present work has responded to them.

I first asked what licenses and restricts the word order variation in embedded clauses in Norwegian adult language. Through corpus studies and an acceptability judgement task, the present work has shown that the exceptional word order V-Neg is relatively common in adult language, whereas Neg-S is highly infrequent. The findings from the studies on adult language have shown that even though both V-Neg and Neg-S occur in restricted contexts, their use is so flexible that it cannot be pinned on, for example, distinct subject types or semantics of embedding verbs. This led to the suggestion that this specific word order variation seems to occur in contexts expressing discourse-new information, i.e. both V-Neg and Neg-S express discourse novelty, in contrast to Neg-V.

Next, I asked what word orders children produce at different stages in the developmental process. Through elicited production tasks, one focusing on verb placement relative to negation (V-Neg/Neg-V) and one on subject placement relative to negation (S-Neg/Neg-S), the present work has shown that children produce all, and only, the three word orders S-Neg-V, Neg-S and V-Neg from around age 3. The child data findings have confirmed patterns observed by previous research, but supported and extended with systematic

knowledge on the topic. Additionally, this dissertation unlocks the possibility of viewing the child language data as parts of one coherent picture. The general pattern in children's production is that, even though they use all three word orders, they overuse the two exceptional orders Neg-S and V-Neg as compared to their target grammar. Children's productions show a gradual decline in the rate of Neg-S and V-Neg, such that the distribution of the three word orders becomes more adult-like with age. As for the temporal dimension, children are found to have target like production of subject placement in embedded clauses around age 5. Similarly, this is when children's production of V-Neg in syntactically unacceptable environments reaches target levels. However, the use of V-Neg is not entirely target-like within the time-span investigated here, meaning that the correct generalizations about when to use this word order in different types of complement clauses are acquired after age 7.

Children's overuse of the lesser-used word orders has informed the third research question, namely how we can analyze the word order patterns in children's production. The answer to this has been given through considering aspects of what children are able to perceive, the frequency of certain structures in their input, and the possible syntactic analysis they might entertain. Thus, the answer to this research question is multifaceted. I will highlight three parts of the answer. Most fundamental seems to be children's ability to perceive and hypothesize over generalizations about their target language for very fine-grained clause types. This means they postulate generalizations for relative clauses separate from factive *that*-clauses, which again are separate from assertive *that*-clauses. Next, it seems children embark on the task with an inherent preference for using low syntactic positions as long as it results in a surface string found in the target language. This is based on previous research as well as an acquisition trajectory suggested in Chapter 6 in this dissertation, such that children gradually assume more structure and more movement. Finally, children's initial, mistaken assumptions that they can use these low positions, which are ultimately unlike the target grammar, must be overcome. This likely happens through an interaction between frequency and children's growing ability to perceive complexity: As they encounter more relevant evidence, i.e. embedded clauses with negation, they will have a larger dataset on which to base hypotheses about the target grammar and to help them retract from erroneous hypotheses. As their intake comprises a growing grammar *and* as their level of maturity increases, they will be able to perceive the more sophisticated parts of the relevant generalizations.

Viewing children's acquisition of these generalizations from a broader perspective, it can inform us about the learner, and thus about children's language development. The picture emerging from the description of children's acquisition above is one of children being attuned to incredibly detailed features of their target language from an early age, but nevertheless taking years to attain the correct target grammar. It gives a timeline for children's emerging embedded clause grammars and shows how children's language development is affected by external factors, such as frequency of a given structure in their input, as well as internal factors, such as their ability to perceive complexity and an intrinsic bias for proceeding in a mostly conservative fashion by learning small rules

and being hesitant in applying syntactic movement. The data in this dissertation also point towards syntactic distinctions being acquired before those related to discourse-pragmatics or semantics, since word order in relative clauses is acquired before that of clauses distinguished by the pragmatics or semantics of their embedding predicate, and since children make a distinction early on between DP and pronominal subjects, but correct restrictions on how the subject types are used are acquired later.

Limitations to the present studies, and the road ahead

The research presented in this dissertation makes an important contribution to our knowledge of children's and adults' production of word order variation found in the complex domain of embedded clauses, as well as unanswered questions about how children deal with variation in acquisition. The results shown here both confirm and add to our knowledge from previous studies, as well as provide new information on the constraints guiding the embedded clause word order variation, and aspects of acquisition such as what children are sensitive to in their input and what rules they seem to make when facing this kind of variation. Based on the emerging picture of these topics, new questions have arisen, thus giving interesting opportunities for future research. Additionally, there have been limitations to these studies that need to be addressed so they can be circumvented in later, similar research. In the following I consider limitations of the present studies and questions for future research.

While the data I have presented unquestionably show that children use the three possible word orders in embedded clauses from an early age, these are likely compatible with several possible perspectives. In the acquisition studies here, I have mainly focused on children's production on a group level. Both the V-Neg and Neg-S studies point to possible individual variation in production. Children's production on an individual level is an interesting venue for further investigations since this could provide new insights. Is it, for example, the case that some children only use one of the word orders for an extended period? And if so, does this correlate e.g. with frequencies from their caregivers' input? Furthermore, as I have alluded to throughout the discussion, the present data cannot inform us about children's production of embedded clause word order before age 3. In connection with the assumption that children's overuse of V-Neg is the result of an initial hypothesis that verbs in general undertake V-to-T movement, a highly relevant and interesting question is whether we can find evidence of this in children's early production. The problem with undertaking such studies is related to the reason 3 was chosen as the lower end of the age range for the present studies: Embedded clauses, particularly when containing negation, are extremely complex and therefore unlikely to be attested in younger children's speech (as also witnessed by the present data: The youngest participants produced the fewest relevant responses). Thus, such research must find alternative ways of accessing children's analyses of early verb placement.

The proposal that embedded V-Neg introduces discourse-new information points to promising possibilities for future research on the topic. Since the proposal here is mostly based on the overall distribution of V-Neg, and not individual sentences from the cor-

pus with surrounding contexts, future research should consider the V-Neg utterances in their discourse. This way one could make an attempt to further define the exact characteristics of discourse in which V-Neg conveys new information. Some of the findings in Paper 1 also raise further questions about embedded V-Neg. For example, why are consequence of degree clauses preferred with the V-Neg order? Do they have a specific function rendering V-Neg necessary? The observation that V-Neg in some contexts is more used than Neg-V also signals that Neg-V might not always be the preferred word order, as has been an underlying assumption both in the present work and in the broader literature on word order in embedded clauses in Norwegian.

The elicitation experiment on subject placement relative to negation (Paper 3) has provided empirical grounds for a structure where data (specifically in child language) were almost non-existent. While this experiment manipulated the subject type (DP/pronouns) to see whether children were able to make separate generalizations for each subject type, it unfortunately did not manipulate givenness. Since S-Neg/Neg-S is claimed to be related to the givenness of the subject, future experimental investigations should be undertaken to see whether children are sensitive to the given/new distinction between subject positions, and also whether adults can be found to make this distinction in an experimental setting.

Finally, the present work on embedded clause variation in adult language has to a certain extent been able to control for the possibility of dialectal influence. Through Papers 1 and 3, it has become clear that more work should be undertaken to understand the possibility of dialectal variation with embedded clause word orders. The data in this dissertation lay the groundwork for addressing these dialectal issues. Additionally, since care has been taken to work on separate embedded clause types in the present work, it has established a database that can be used for later comparisons across clause types in future work on embedded word orders across dialects.

Even though the work carried out in this dissertation naturally has limitations, the research presented here provides a valuable, extensive empirical contribution to our knowledge of specific word order variations in both adult and child language. We now know the prevalence of three possible embedded word orders in adult language, and in which contexts each word order is used. Similarly, the present studies have contributed important findings on word order patterns in children's language and offered an account of how children deal with variation in acquisition.

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Distribution and function of embedded V-Neg in Norwegian: A corpus study

(Ringstad 2019)

ARTICLE

Distribution and function of embedded V–Neg in Norwegian: A corpus study

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(Received 21 February 2018; revised 04 December 2018; accepted 23 January 2019; first published online 15 October 2019)

Abstract

Mainland Scandinavian displays a main clause phenomenon (MCP), where some embedded clauses allow the word order V(erb)–Neg(ation), in addition to the canonical Neg–V. Much has been written on the licensing conditions for embedded V–Neg, but formulating the exact conditions has proven difficult. This may be due to the fact that research has typically focussed on selected sets of clauses allowing this phenomenon and much of it has been based on the authors' grammaticality judgements. Drawing conclusions about the licensing conditions for embedded V–Neg requires examining all types of environments that allow it in natural speech as well as the types of environments that disallow it. Therefore, the primary goal of this paper is to map out the full distribution of embedded V–Neg. This paper examines embedded V–Neg collected from five corpora of spontaneous Norwegian speech. The data provide information on the relative frequency of V–Neg in various constructions and identify hitherto unattested contexts for this word order. The paper shows that V–Neg is productive in adjunct clauses, a fact difficult to accommodate under accounts claiming it is licensed under selection of specific predicates. The data support a more discourse-oriented approach to embedded V–Neg.

Keywords: corpus study; embedded V–Neg; embedded V2; main clause phenomena; Norwegian; word order

1. Introduction

This paper examines a MAIN CLAUSE PHENOMENON (MCP) found in a subset of embedded clauses in Norwegian, where the verb (V) precedes negation (Neg) or other sentence adverbs (V–Neg), as in (1b), instead of following them (Neg–V), as in (1a), which shows the canonical word order.¹

- (1) a. Da mente han [at han ikke kunne være gift] (Neg–V)
then felt he that he not could be married
'Then he felt he couldn't be married.'
- b. Da mente han [at han kunne ikke være gift] (V–Neg)
then felt he that he could not be married
'Then he felt he couldn't be married.'

(ScanDiaSyn)²

Past work on this word order variation (e.g. Vikner 1995; Bentzen et al. 2007; Wiklund et al. 2009; Julien 2010, 2015) has focussed on two inter-related areas: (i) the appropriate syntactic analysis of both word orders, and (ii) the nature and distribution of the pragmatic and semantic contexts licensing V–Neg (since this non-canonical word order is not always permitted).

Despite extensive research on embedded V–Neg, there is no consensus on which environments allow it, how to best analyze it, and where it is licensed. This may be due to the fact that most studies based their conclusions about the licensing of embedded V–Neg on analyses of a restricted set of syntactic environments (complement clauses) and the specific semantic traits of the context.³ Further, many of the studies also rely heavily on authors' intuitions, which may provide biased estimates of the phenomenon's distribution. Thus, research may have overlooked relevant data on the structure and licensing conditions of embedded V–Neg.

This study aims to fill an empirical gap by providing a comprehensive overview of the distribution of embedded V–Neg in Norwegian natural speech. Such an overview is a prerequisite for developing an accurate analysis of the phenomenon: understanding the distribution of embedded V–Neg can shed light on its function and licensing conditions as well as how it may relate to other main clause phenomena.

To fulfil its aim, the study provides an overview of all embedded clause types with the V–Neg word order in five corpora of spoken Norwegian. It builds and improves on prior corpus studies of this or closely related main clause phenomena in Scandinavian languages (viz. Julien 2010, Jensen & Christensen 2013, Christensen, Jensen & Christensen 2015) by offering both frequency information and a more fine-grained taxonomy of embedding environments. The frequency information contributes to determining which examples are representative of the word order's use in natural speech. The taxonomy helps pinpoint the syntactic, semantic, and pragmatic factors that may govern its distribution, in addition to helping identify the common properties of clauses allowing V–Neg.

All previous accounts of the licensing conditions for embedded V–Neg seem to be correct TO SOME EXTENT, but no approach explains all possible occurrences. This is potentially due to the fact that they do not consider its full distribution. Therefore, the present study asks: Which theoretical direction can best explain the distribution of the data in this corpus?

I examine the verb's position only as it relates to negation. Other adverbs are excluded from the investigation since adverb type can affect the frequency with which word orders (Verb–Adverb/Adverb–Verb) appear (Christensen et al. 2015). To avoid the influence of adverb type, I focus on the order of the verb and negation.

The paper opens with a review of the existing literature on the distribution of embedded V–Neg and discusses the seminal studies on the phenomenon. I then examine my own corpus findings, including features such as frequency, contexts allowing or disallowing embedded V–Neg, and the different embedding environments. Lastly, I discuss the implications of these findings for current accounts of V–Neg and show that the data support a more discourse-oriented approach to embedded V–Neg.

2. Distribution: Where is V–Neg found?

There are a number of instances where the canonical embedded clause word order (2a) is changed to a word order resembling that of main clauses. The verb is consistently the second constituent after the complementizer, but the first element varies.⁴

- (2) a. Han meinte [at han **ikkje** var klar for eksamen] (Canonical, Neg–V)
he meant that he not was ready for exam.DEF
 ‘He meant that he wasn’t ready for the exam.’
- b. Han meinte [at han var **ikkje** klar for eksamen] (V–Neg)
he meant that he was not ready for exam.DEF
 ‘He meant that he wasn’t ready for the exam.’
- c. Han meinte [at eksamen var han klar for] (Non-subject-initial)
he meant that exam.DEF was he ready for
 ‘He meant that the exam he was ready for.’

It can be a subject, as in (2b), in which case we can tell that the word order is non-canonical only if the verb precedes an adverbial or negation, or it can be another argument or adjunct phrase, as in (2c). These configurations are often considered part of the inventory of embedded verb second (V2). Subject-initial and non-subject-initial cases of V2 typically have the same distribution in Mainland Scandinavian (see e.g. Wiklund et al. 2009), but there is disagreement on whether subject-initial cases should be treated like cases where non-subjects are clause-initial. In this paper, I focus on subject-initial cases, like those in (2b).

2.1 Embedding environments

In this section, I first discuss cases where, according to the existing literature, embedded V–Neg is allowed in complement clauses. Then, I discuss complement clauses claimed to disallow it. Lastly, I explore whether and when V–Neg is possible in adjunct clauses.

2.1.1 Complement clauses

Clause types allowing embedded V–Neg are typically declarative complement clauses, i.e. complement clauses with the complementizer *at* ‘that’ (Faarlund, Lie & Vannebo 1997:983), as in (3).⁵

- (3) Selmer sa [at han visste **ikkje** om noko festlegare]
Selmer said that he knew not about anything funnier
 ‘Selmer said that he didn’t know about anything more fun.’

Embedded V–Neg clauses can also be predicates in copula constructions, as in (4) below, and complements of nouns, as in (5) (Julien 2010:14–15 ex. (20) and (23)).

- (4) Copular predicate
 Mitt poeng er [at vi kjenner **ikke** omfanget]
my point is that we know not extent.DEF
 ‘My point is that we do not know the extent.’

(5) *Noun complement*

Så trekker han konklusjonen [at annet er **ikke** å vente]
then draws he conclusion.DEF that other is not to expect
 ‘Then he draws the conclusion that nothing else is to be expected.’

In addition, embedded V–Neg is found in so-called ‘consequence of degree constructions’ (Julien 2010, also mentioned in more general terms as embedded V2 in Heycock 2006) of the type ‘so X that’, as in (6) (Julien 2010:18 ex. (31)).

(6) *Consequence of degree*

Det var så liten plass [at vi kunne **ikke** bo der]
it was so little space that we could not live there
 ‘The place was so small that we couldn’t live there.’

These clauses are often overlooked in the literature on embedded V–Neg. It is not clear whether they are so rare that ignoring them is legitimate, so information about the frequency of V–Neg in these clauses may be crucial.

Certain semantic classes of predicates seem to disallow embedded V–Neg in their complement clauses. Embedded V–Neg clauses are normally not found in complements of factive matrix predicates, as in (7), (e.g. Faarlund et al. 1997: 983), whereas assertive verbs, such as verbs of saying and thinking (Heycock 2006:192) generally allow V–Neg in the complement, as in (8), (examples from Wiklund et al. 2009).

(7) *Factive predicate*

*Han angret på [at han hadde **ikke** sunget]
he regretted on that he had not sung
 ‘He regretted that he had not sung.’

(8) *Asserted complement*

Han sa [at han kunne **ikke** synge i bryllupet]
he said that he could not sing in wedding.DEF
 ‘He said that he couldn’t sing at the wedding.’

Prior work has tried to understand which verbs allow embedded V–Neg in the complement clause by using a classification system originally proposed by Hooper & Thompson (1973). This classification seems able to predict broad classes of predicates that allow or disallow embedded V–Neg, as shown in Table 1. V–Neg is allowed under strongly (class A) and weakly (class B) assertive matrix predicates and semi-factive predicates (class E). Under factive (class D) and non-assertive (class C) matrix predicates, embedded V–Neg is not allowed (Wiklund et al. 2009:1917). Although this classification seemingly makes mostly accurate predictions, its appropriateness is debatable. This will be addressed in Section 2.2.

Lastly, it has been reported that embedded ‘that’-clauses do not permit V–Neg if the matrix predicate is negated, as shown in (9) (Faarlund et al. 1997:983; Heycock 2006:193).

Table 1. Verb classes according to assertive and factive status (Wiklund et al. 2009:1917, based on Hooper & Thompson 1973).

Class A (strongly assertive)	Class B (weakly assertive)	Class C (non-assertive)	Class D (factive)	Class E (semi-factive)
Say	Believe	Doubt	Regret	Discover
Claim	Think	Deny	Be sad about	Understand

(9) *Negated matrix predicate*

*Espen sa ikkje [at Therese kunne **ikkje** vinne]
Espen said not that Therese could not win
 ‘Espen didn’t say that Therese couldn’t win.’

However, Bentzen et al. (2007:108) argue that this generalization does not hold if the matrix verb is semi-factive. Thus, it is debatable whether negated matrix predicates allow V–Neg and, if so, which ones do.

2.1.2 *Ungrammatical environments*

According to the literature, a few environments never permit embedded V–Neg: relative clauses, as in (10), and indirect *wh*-questions, seen in (11) (Franco 2010:143).

(10) *Relative clause*

*Den jenta [som har **ikkje** kamma håret]
that girl.DEF who has not combed hair.DEF
 ‘The girl who hasn’t combed her hair.’

(11) *Indirect wh-questions*

*Eg lurar på [kven ho dansa **ikkje** med]
I wonder on who she danced not with
 ‘I wonder who she didn’t dance with.’

Even though there seems to be agreement on this, it needs to be verified in language production.

2.1.3 *Adjunct clauses*

It is often claimed that embedded V–Neg is not allowed in adjunct clauses (Faarlund et al. 1997). Temporal and conditional clauses, (12) and (13), respectively, block V–Neg (Hrafnbjargarson & Wiklund 2009:29).

(12) *Temporal adverbial clause*

*John såg Louise [når ho gjekk **ikkje** heimover]
John saw Louise when she walked not towards.home
 ‘John saw Louise when she wasn’t walking towards home.’

(13) *Conditional clause*

*Han kjem heim [viss han får **ikkje** legetime]
he comes home if he gets not doctor's.appointment
 'He comes home if he doesn't get a doctor's appointment.'

Also, according to Faarlund et al. (1997:1036), 'so that'-clauses can never embed V–Neg. Additionally, *fordi* 'because'-clauses potentially allow V–Neg, but it is heavily dispreferred (ibid.). Heycock (2006:192–193) also states that in Mainland Scandinavian and Frisian embedded verb second (as a larger category including embedded V–Neg) is not possible in adjuncts, with one exception: 'rationale clauses introduced by *om't*, *omdat* or *omreden dat*', which would correspond to 'because'-clauses.

Data like (12) and (13) seem to have contributed to the general perception that there is a ban on embedded V–Neg in all adjunct clauses. However, there is evidence that such a ban would be too restrictive. Haegeman (2006a, b, 2010, 2012a, b) looks more generally at main clause phenomena (MCP) and argues that some adverbial clauses allow certain MCP, depending on the clause's degree of integration into the matrix clause. Adverbial clauses that are less integrated into the matrix clause are defined as PERIPHERAL. Their function is to structure the discourse, rather than modify the matrix clause. Peripheral clauses are found to allow MCP (ibid.). Bentzen (2011) agrees with this claim and argues that V–Neg is allowed in certain adverbial clauses, such as PERIPHERAL temporal clauses, PERIPHERAL cause clauses with the complementizer *fordi* 'because', and consequence clauses with the complementizer *sånn at* 'so that', as in (14) (example modified from Bentzen 2011:4 ex. (14)).

(14) *Consequence clause*

Han gjemte boka mi, [sånn at jeg kunne **ikke** gjøre
he hid book.DEF my so that I could not do
 alle leksene mine]
all homework.DEF mine
 'He hid my book, so I couldn't do all my homework.'

Adverbial clauses that are temporally integrated into the matrix clause and modify the event introduced in its embedding clause are called CENTRAL. They are claimed to disallow MCP in general (Haegeman 2012b) and also embedded V–Neg specifically (Bentzen 2011), as in (12) above. Contrary to Bentzen (2011), Hrafnbjargarson & Wiklund (2009:29) claim that clauses of purpose, in (15), and reason, in (16), should allow embedded V2, which embedded V–Neg is often argued to be a subset of.⁶

(15) *Purpose clause*

Han gøynde bøkene [slik at dei skulle **ikkje** bli funne]
he hid books.DEF so that they would not be found
 'He hid the books so that they wouldn't be found.'

(16) *Reason clause*

Han gøynde seg [fordi (at) dei slutta **ikkje** å jage han]
 he hid REFL because that they stopped not to chase him
 'He hid because they never stopped chasing him.'

Lastly, there is also a question of whether concessional clauses allow V–Neg in Norwegian. According to Bentzen (2011), concessional clauses with the complementizer *selv om* 'even though' disallow this word order and clauses with the complementizer *skjønt* 'although' allow it. In Danish, *selv om* 'even though' allows the V–Adv word order (Christensen et al. 2015:106), and *fastän* 'although' allows the seemingly related phenomenon of non-subject topicalization in Swedish (Hrafnbjargarson & Wiklund 2009:29).

A thorough study of the word order in adverbial clauses in Danish finds that the word order V–Adv is quite common in such environments (Christensen et al. 2015). This may apply to Norwegian as well, since Danish resembles Norwegian in many respects (e.g. general word order). However, embedded negation in Danish seems to have properties diverging from Norwegian in several ways (Eide 2002, Ørsnes 2012).

It is clear that research on V–Neg in adverbial clauses in Norwegian disagrees on what is possible in spoken language and to what extent one can apply conclusions from related languages. Part of the problem seems to be that the literature is based largely on introspection, not taking into account authentic speech production. The lack of consensus on the status of V–Neg in adverbial clauses makes this phenomenon particularly interesting to study in corpora of spoken language.

2.1.4 *Embedded verb type*

The literature on children's acquisition of embedded clauses notes that children use the word order V–Neg in embedded clauses more frequently than adults in Scandinavian languages (Håkansson & Dooley Collberg 1994, Westergaard & Bentzen 2007, Heycock et al. 2013, Waldmann 2014). Håkansson & Dooley Collberg (1994) and Heycock et al. (2013) also observe that children use the word order V–Neg more often when the verb is an auxiliary than when it is a main verb. It has not been established whether this is a property of adult language. To get a complete picture of V–Neg's distribution, this question will be addressed in the current study.

2.1.5 *Summary*

This section provided an overview of claims regarding where embedded V–Neg may be found and showed that there is uncertainty about the scope of the phenomenon. Although there is relative agreement on which complement clauses allow embedded V–Neg, there is disagreement on its distribution in adjunct clauses. Additionally, the research discussed here does not make any claims of exhaustiveness. Thus, we might find V–Neg in environments never considered until now. Claims about the distribution of V–Neg differ substantially, so evidence from natural speech is needed to clarify the phenomenon.

2.2 Approaches to the licensing of V-Neg

Existing approaches to embedded V-Neg can be grouped into two categories according to the licensing conditions they advocate: some claim V-Neg is only possible in clauses that are selected by a predicate of a particular semantic type (Caplan & Djärv 2017, Djärv, Heycock & Rohde 2017), while others argue that the licensing of V-Neg is driven by local (clause) pragmatics (Wiklund et al. 2009, Julien 2010, Jensen & Christensen 2013).⁷ Teasing the approaches apart is difficult because there is a tight relationship between the semantics of verbs and the discourse-pragmatic properties of the clauses they embed. One might argue that approaches such as Julien (2010, 2015) constitute a third category, involving speaker orientation, i.e. the speaker's connection to the larger pragmatic context. For our purposes, distinguishing between lexical-semantic and pragmatic licensing accounts is adequate.

Most existing approaches deal to some extent with factivity and thus presupposition, given the natural relationship between these two notions (see Karttunen 1971, Kiparsky & Kiparsky 1971). I will assume that a presupposition is an implicit expression of a fact or common knowledge (see e.g. Stalnaker 1978) and that factive predicates embed presupposed propositions (Hooper & Thompson 1973). Existing proposals on the licensing conditions of V-Neg typically discuss how it is related to assertion. Unless otherwise specified, I will assume that an assertion is a proposition that adds new information to the discourse or is an expression of the utterer's beliefs (see Hooper & Thompson 1973, Wiklund et al. 2009). In this view, assertivity and presupposition do not overlap.

Authors discussing how embedded V-Neg relates to assertivity and presupposition (e.g. Heycock 2006; Bentzen et al. 2007; Wiklund et al. 2009; Julien 2010, 2015; Caplan & Djärv 2017; Djärv et al. 2017) follow the tradition of Hooper & Thompson (1973), who in their seminal work discuss the licensing of MCP in embedded clauses. Hooper & Thompson (1973) claim that MCP are only licensed in embedded clauses selected by assertive – not factive – predicates, as shown in Table 1 and examples (7) and (8) above.

Djärv et al. (2017) show through acceptability judgements that in Swedish, embedded V-Neg is dispreferred in complements of factive predicates and strongly preferred under assertive predicates. However, V-Neg is licensed in the complement of semi-factive predicates in a factive mode (Wiklund et al. 2009), as are other MCP, as pointed out by Hooper & Thompson (1973). This can be seen when the truth of the complement is entailed even when the matrix predicate is negated, in ENTAILMENT UNDER NEGATION (Kiparsky & Kiparsky 1971). Surprisingly, V-Neg is also embedded under factive predicates in texts of certain genres (Caplan & Djärv 2017) and under factive predicates in spoken corpus production (Julien 2010). These findings show that what licenses embedded V-Neg must be more nuanced than assumed by Hooper & Thompson (1973), leading some to argue that properties other than (non-)factivity make up the licensing conditions for embedded V-Neg. Such accounts typically claim that what licenses embedded V-Neg is not lexical selection, but the pragmatic function within the clause or of the clause in the discourse. I will review a few such accounts.

A typical view of how pragmatic function influences the occurrence of V–Neg advocates that embedded V–Neg is licensed in clauses constituting the core meaning of a sentence, i.e. the part of a clause that can be questioned and denied (Wiklund et al. 2009:1927). This is referred to as the MAIN POINT OF THE UTTERANCE (MPU; Wiklund et al. 2009; the term was introduced by Simons 2007), FOREGROUNDING (Jensen & Christensen 2013) or AT-ISSUE-NESS (Caplan & Djärv 2017). In this view, clauses containing the non-canonical word order V–Neg are claimed to receive more focus, or attention, than their canonical Neg–V counterparts (Jensen & Christensen 2013:39–40). Crucially, as pointed out by Wiklund et al. (2009), the possibility a clause has of being the MPU never hinges on the V–Neg word order. Thus, these accounts do not claim that a clause’s status as MPU is an explanation for the function of V–Neg or a completely necessary prerequisite for V–Neg. Rather, they show that embedded V–Neg is typically co-distributed with embedded clauses holding the MPU status in a sentence.⁸ Not all pragmatic accounts of embedded V–Neg agree that the MPU approach is correct. The approach has a few problems: an experimental study by Djärv et al. (2017) suggests that certain manipulations affecting participant perception of MPU do not affect where participants allow V–Neg. Furthermore, some contexts can make up the MPU but still do not allow embedded V–Neg (Julien 2015:161). Based on corpus data showing production of V–Neg in clauses embedded under factive predicates, Julien (2010) argues that the licensing of embedded V–Neg is related to assertivity (as a discourse-pragmatic function, not directly determined by lexical properties). Contrary to general views on assertivity as distinct from presupposition (Kiparsky & Kiparsky 1971), she argues that a presupposed clause can simultaneously be asserted (Julien 2010:13). This happens in cases where the speaker utters a presupposed clause that might convey new information to the hearer, e.g. as a reminder. Given the inclusiveness of this definition of assertivity, it is not clear how its impact on word order can be tested: what would be rejected as assertive under this account?

Lastly, a discourse-lexical explanation considers V–Neg licensed by the lexical class of embedding predicates, so the relevant property for licensing is not factivity. Such a proposition is put forward by Caplan & Djärv (2017), who found the V–Neg word order under factive predicates in their study of Swedish. Investigating matrix predicates embedding and not embedding V–Neg, they suggest that another property distinguishes the two types – discourse-familiarity: predicates such as ‘appreciate’ require the content of the embedded clause to be familiar in the discourse and disallow embedded V–Neg, whereas predicates such as ‘say’ might convey discourse-new information in the following complement clause and therefore allow V–Neg.⁹ This can also be seen when assertive predicates such as ‘say’ and ‘think’ are negated: in such cases, they embed discourse-familiar information, as in (17), and rarely embed V–Neg (*ibid.*).

(17) They didn’t say on the radio [that Trump resigned].

Since discourse-familiarity relates to pragmatics, Caplan & Djärv (2017) argue that it is constrained by the semantics of specific predicates, but not determined by it.

Table 2. Overview of corpora used in this paper.

Corpus	From	Total utterances	Speaker's dialect(s)
BigBrother	Tekstlab	79,352	Different varieties
ScanDiaSyn	Tekstlab	358,659	Varieties from the whole country
NoTa	Tekstlab	150,769	Oslo
Ringstad	CHILDES	52,622	Trøndelag, Nordland, Eastern Norway
Simonsen	CHILDES	11,928	Eastern Norway
Total		653,330	

To sum up, current approaches provide relatively reliable explanations for where V–Neg is licensed. However, even though they can explain the distribution and licensing of V–Neg, they consider such fine-grained properties that they all find counterexamples. Furthermore, accounts claiming embedded V–Neg is licensed by selection of a matrix predicate cannot explain the licensing of this word order in adjunct clauses. The overview of the distribution of V–Neg in this study will indicate which existing theoretical direction seems most promising in explaining the actual distribution of V–Neg and doing so comprehensively.

3. Corpora and methodology

Data were collected from five corpora of spontaneous monolingual speech. Three corpora belong to Tekstlab, University of Oslo, and are the largest accessible corpora of Norwegian natural speech: NoTa (Tekstlab 2004), ScanDiaSyn (Johannessen et al. 2009) and BigBrother (Tekstlab 2009).¹⁰ Two additional corpora are taken from the CHILDES database: Ringstad (Ringstad 2014) and Simonsen (Simonsen 1990). All adult utterances are drawn from the two CHILDES corpora and most are child-directed. Table 2 provides information on the corpora and the number of utterances in each.^{11,12}

The NoTa and the ScanDiaSyn corpora comprise recorded dialogues and the speakers in each dialogue use the same dialect. In this study, these corpora are represented by 117 and 303 speakers, respectively. The BigBrother corpus comprises transcripts of all dialogues between the contestants on the BigBrother TV show in 2001. This study includes relevant data (i.e. production of embedded clauses with negation) from 11 participants. The CHILDES corpora consist of a dialogue between a child and an adult. Data from the Ringstad corpus is child-directed speech produced by five adults, each a close relative of the child, whereas data from the Simonsen corpus come from one speaker, an investigator. The range of speech situations, speakers and dialects represented in the dataset provides a representative picture of the distribution of V–Neg.

All three Tekstlab corpora are tagged for part of speech (POS), and the search strings used to extract utterances from these corpora can be found in Table A1 in the appendix. The two CHILDES corpora are not tagged, so a manual search was

Table 3. Number of clauses relevant for this paper (in parentheses), with the percentage given for the proportion of each word order for all relevant clauses.

	Neg-V clauses		V-Neg clauses	
Adult corpora				
ScanDiaSyn	57%	(292)	43%	(219)
NoTa	73%	(210)	27%	(79)
BigBrother	77%	(200)	23%	(61)
Sub-totals	66%	(702)	34%	(359)
Child corpora				
Ringstad	77%	(59)	23%	(18)
Simonsen	100%	(7)	0%	(0)
Sub-totals	79%	(66)	21%	(18)
Totals	67%	(768)	33%	(377)

carried out for all complementizers followed by a clause containing negation. Only clauses corresponding to the strings in the Tekstlab search were included in the study.

None of the corpora are tagged for covert elements, so it was not possible to search for embedded clauses without an overt complementizer as this would mean manually searching through all utterances in existing corpora, an overwhelming task. It is not clear, however, that including clauses without complementizers would yield higher numbers of embedded clauses allowing V-Neg. According to Faarlund et al. (1997), the V-Neg word order is not possible in clauses with an omitted complementizer in Norwegian (contrary to the findings for Danish, where the V-Adv word order is more frequent in clauses that lack a complementizer; Christensen et al. 2015).¹³

Several types of sentences were excluded from the current study even though they were relevant hits in the corpus search. In Norwegian, in addition to occurring pre- or postverbally, negation can also occur directly following the complementizer, as in (18).

- (18) Det er ein grunn til [at **ikkje** prinsen held tale]
there is a reason for that not prince.DEF holds speech
 ‘There is a reason the prince doesn’t give a speech.’

Since this position will not be discussed in this paper, clauses with this word order were excluded. A few clauses with the word order V-Neg were also excluded. This concerns clauses with the initial element *for* ‘for’. Even though this element looks similar to other adverbial complementizers, it is – according to the Norwegian tradition – classified as a clausal conjunction operator (Faarlund et al. 1997:25) and not a subordinator.¹⁴ Table 3 gives an overview of clauses relevant for this paper.

Table 4. Overview of relevant corpora numbers. Token numbers in parentheses.

Corpus	All non-embedded clauses	Embedded clauses, % of all utterances	Embedded clauses with negation, % of all utterances
Adult corpora			
ScanDiaSyn	338,516	6% (20,143)	0.38% (1361)
NoTa	140,761	7% (10,008)	0.51% (762)
BigBrother	74,031	7% (5321)	0.76% (607)
Sub-totals	553,308	6% (35,472)	0.46% (2730)
Child corpora			
Ringstad	48,362	8% (4260)	0.29% (151)
Simonsen	11,144	7% (784)	0.34% (40)
Sub-totals	59,506	8% (5044)	0.30% (191)
Totals	612,814	6% (40,516)	0.45% (2921)

The dialects of all speakers were categorized into one of ten larger dialectal areas (Table A2 in the appendix) according to a map of Norwegian dialects (Mæhlum & Røynealand 2012:179 map 6). I verified that V–Neg occurs in all dialects represented in the corpora. Since V–Neg is acceptable in all dialects, no speakers were excluded from this investigation due to dialectal differences. This is in line with Bentzen (2014), who found very little geographical variation in judgements of V–Neg (except for V–Neg under semi-factives, where there are SOME variable judgements). I have listened through a large portion of the data material to exclude possible instances of restarts in speech production. One such restart is used in example (19) for illustrative purposes.

4. Findings

Table 4 provides information on the frequency of embedded and non-embedded clauses. Unfortunately, none of the corpora used allows exclusion of questions, so we cannot ensure that the non-embedded clauses are all declaratives. The embedded clauses include nominal, adverbial, and relative clauses as well as indirect questions. Across all utterances, only 6% contain an embedded clause. Embedded clauses with negation are rarer, constituting only 0.45% of all utterances. This means that embedded clauses containing negation are infrequent in speech.

Section 2.1 discussed the environments considered ungrammatical for V–Neg: relative clauses, indirect *wh*-questions and a few types of adverbial clauses (conditional and temporal) (e.g. Hrafnbjargarson & Wiklund 2009, Franco 2010). A search in the corpora shows that V–Neg is not found in any embedded *wh*-questions, conditional and temporal clauses, or relative clauses.^{15,16} The literature also claims that concessional clauses with the complementizer *selv om* ‘even though’ should not allow V–Neg in Norwegian (Bentzen 2011), even though this word order is allowed in Danish. Corpus data show that V–Neg surprisingly is

Table 5. Numbers for contexts where V–Neg is claimed to be ungrammatical. These numbers are drawn from the ScanDiaSyn, BigBrother and NoTa corpora. The question mark indicates an occurrence highly likely to be a restart.

Clause type	Neg–V	V–Neg
Temporal	185	0
Conditional	372	0
Relative	680	?1
Embedded Q	2	0
<i>om</i> ‘if’	78	5
Concessional (<i>selv om</i>)	54	5
Negated matrix predicate	62	18

found in a few concessional clauses. Table 5 gives an overview of occurrences of V–Neg in contexts where it is claimed to be ungrammatical.

According to Faarlund et al. (1997:983), Heycock (2006:193), and others, negated matrix predicates generally do not allow embedded V–Neg (as noted in Section 2.1 above, Heycock (2006) discusses embedded V2 in general, but seems to include embedded V–Neg in this larger category). Twenty-three embedded clauses with V–Neg were found to have a negated matrix predicate. Five of these clauses, such as (19), seemed to be restarts or pauses and were therefore excluded from the data material.

- (19) Jeg sier ikke [at jeg *sier ikke* at den er dårlig]
I say not that I say not that it is bad
 ‘I don’t say that I don’t say that it’s bad.’

(NoTa)

However, (20) shows that V–Neg is found under negated predicates that are not semi-factive. Thus, we can tentatively conclude that negated matrix predicates do not completely rule out the embedded word order V–Neg.¹⁷

- (20) Jeg sier ikke [at man *skal ikke* alltid måtte si ting]
I say not that one should not always have.to say things
 ‘I’m not saying one shouldn’t always have to say things.’

(BigBrother)

4.1 Embedding environments for V–Neg

4.1.1 Complement clauses

Section 2.1 showed that some complement clauses allow embedded V–Neg. This is supported by the corpus data: example (21) shows one finding of V–Neg in a nominal clause embedded with the complementizer *at* ‘that’.

Table 6. Word order as a factor of clause type and/or function.

Clause type/function	Complementizer	Neg-V	V-Neg	Total
Consequence of degree	<i>så X at</i> 'so X that'	24 (29.3%)	58 (70.7%)	82
Complement	<i>at</i> 'that'	584	279	863
	<i>bare at</i> 'just that'	3	4	7
	<i>bortsett fra at</i> 'except that'	0	1	1
	<i>med at</i> 'with that'	1	0	1
	<i>pluss at</i> 'plus that'	2	1	3
Coordinating	<i>eller at</i> 'or that'	1	0	1
	<i>men at</i> 'but that'	0	2	2
Comparative	<i>enn at</i> 'or that'	1	0	1

- (21) *problemet oppi der er [at du kan ikke hogge
 problem.DEF up there is that you can not cut
 noe mye skog]
 any much wood*
 'The problem up there is that you can't cut much wood.'

(ScanDiaSyn)

Since existing studies do not map the distribution of V-Neg in complement clauses exhaustively, the findings of this study offer new insights into complement clauses in which speakers use this word order.

Table 6 maps out the distribution of Neg-V and V-Neg in clauses embedded with the complementizer *at* 'that'. As it demonstrates, 'consequence of degree'-clauses, as in (22), are surprisingly frequent and 70% of these clauses display the V-Neg word order.

- (22) *Puslespillet er så stort [at vi får nesten ikke plass
 jigsaw.puzzle.DEF is so big that we get almost not place
 på bordet]
 on table.DEF*
 'The puzzle is so big that we almost don't have room on the table.'

(Ringstad)

Such a high frequency of V-Neg indicates that this clause type might have a particular function rendering V-Neg necessary.

Additionally, Table 6 includes a few instances of coordinating and comparative clauses embedded with the complementizer *at* 'that'. Even though there are only a few occurrences of each, they are important to note for understanding the distribution of embedded V-Neg.

Table 7. The most frequent matrix predicates embedding complement clauses with both word orders and the most frequent matrix predicates only embedding one of the word orders classified according to semantic function, loosely following Levin's (1993) verb classes and classified according to pragmatic function following Hooper & Thompson's (1973) verb classes. Numbers given in parentheses show occurrences of complement degree clauses ('so X that'-clauses).

Function	Hooper & Thompson (1973) class	Embedding verb	Neg-V number	V-Neg number
Copula	NA	<i>være</i> 'be'	216 (18)	119 (36)
		<i>bli</i> 'become'	17 (1)	15 (7)
Communication	assertive	<i>si</i> 'say'	52	46
Opinion		<i>mene</i> 'mean'	9	5
Epistemic	(weakly) assertive	<i>tru</i> 'think/believe'	12	3
		<i>tenke</i> 'think'	10	2
		<i>synes</i> 'feel/think'	8	1
Knowledge	semi-factive	<i>vite</i> 'know'	22	12
Perception	(semi-)factive	<i>høre</i> 'hear'	6	5
		<i>sjå</i> 'see'	5	2
	(weakly) assertive	<i>føle</i> 'feel'	7	2
Cognition	(semi-)factive	<i>huske</i> 'remember'	3	5
	semi-factive	<i>skjønne</i> 'understand'	9	4
Command	assertive	<i>passe på</i> 'look after'	16	—
Desire	non-factive	<i>håpe</i> 'hope'	7	—
Cognition	semi-factive	<i>forstå</i> 'understand'	4	—
Conjecture	assertive	<i>må innrømme</i> 'must admit'	—	2

4.1.2 Embedding verbs (i.e. matrix predicates)

In Section 2.2, we saw that many studies of embedded V–Neg claim that this word order is related to the matrix predicate either by the embedded clause being asserted or presupposed by the matrix predicate or by expressing a particular function in the discourse through the matrix predicate. I have grouped the matrix verbs embedding both word orders and occurring twice or more according to verb function (loosely following Levin's (1993) classification of verb classes) and pragmatic function (following Hooper & Thompson's (1973) classes by applying Kiparsky & Kiparsky's (1971) entailment under negation test and Karttunen's (1971) test of embedding semi-factives under a conditional). The results are in Table 7 (a complete version of this table can be found in the appendix, as Table A3).

Table 8. Overview of the copula constructions embedding the word orders Neg-V and V-Neg.

Construction type	Neg-V	V-Neg
Predicational clause	72	76
Cleft clause	5	0
<i>det er bare</i>	4	2
<i>det er det</i>	10	5
Specificational clause	3	8
Extrapolated	63	3

Copula (*være* ‘be’) is by far the most frequent matrix verb: it embeds V-Neg 119 times and Neg-V 216 times; *bli* ‘become’ embeds these word orders 15 and 17 times, respectively. The high frequency of copular constructions is surprising, as they are hardly mentioned in the existing literature. I now examine more closely the types of copular constructions instantiated.

Looking more closely at the copula constructions (*være* ‘be’), we find the following (overview in Table 8): embedded V-Neg is used mostly in predicational contexts (N = 76), as in (23), where the predicate denotes a property of the subject (a referential *det* ‘it’, or other expression), or a more general property when the subject is an expletive *det* ‘it’.

(23) *Predicational copula*

Sommerbilen var [så senka [at han kunne **ikke** ha den
summer.car.DEF was so lowered that he could not have it
 om vinteren]]
in winter.DEF

‘The summer car was so lowered that he couldn’t use it in the winter.’

(ScanDiaSyn)

In addition, V-Neg occurs in eight copula clauses with a specificational reading (as described in Mikkelsen 2005), where the predicate identifies the subject, as in (24).

(24) *Specificational copula*

Problemet er [at hun husker **ikke**]
problem.DEF is that she remembers not
 ‘The problem is that she doesn’t remember.’

The V-Neg word order is also found in constructions with an extraposed subject (N = 3), as in (25), where a complex subject is extraposed and referred to by a cataphoric *det* ‘it/that’ (see Åfarli & Sakshaug 2006, Borthen 2011).

(25) *Extraposed subject*

Så er det helt klart [at vi hadde ikke fått
 then is it completely obvious that we had not gotten
 filmen først
 movie.DEF first

‘Then it is completely obvious that we had not gotten the movie first.’

In addition, V–Neg is found embedded in five copula constructions I dub *det er det* ‘it is that’ (26a) and two I dub *det er bare* ‘it is just’ (26b).

(26) a. *Det er det* ‘it is that’

Det var det [at vi behøvde ikke være på meieriet
 it was that that we needed not be at dairy.DEF
 så tidlig]
 so early

‘It was that we didn’t have to be at the dairy so early.’

(ScanDiaSyn)

b. *Det er bare* ‘it is just’

Det er bare [at jeg har ikke fått tatt dem på]
 it is just that I have not got taken them on
 ‘It is just that I haven’t taken them on.’

(Ringstad)

The word order Neg–V is generally found in similar environments as V–Neg in copular clauses. However, while Neg–V is found in five clefted clauses, illustrated in (27), V–Neg is not attested in any such clause types in this study.

(27) *Cleft clause*

Det er flere ganger [at Anita ikke har gidde det]
 it is several times that Anita not has bothered that
 ‘It has been several times that Anita couldn’t be bothered to do that.’

Additionally, Neg–V is found in 63 clauses with an extraposed subject, whereas V–Neg occurs in only three such clauses. The significant difference suggests that different clause functions may require different word order, since the verb is constant while the clause function varies.

Predicates other than the copula that embed both word orders frequently (Table 7) can be grouped into verbs of communication (e.g. *si* ‘say’), perception (e.g. *sjå* ‘see’), epistemic verbs (e.g. *tru* ‘think/believe’) and verbs of knowledge (*vite* ‘know’). The frequently found matrix predicates are assertive (i.e. *si* ‘say’ and *fortelle* ‘tell’) and semi-factive (i.e. *sjå* ‘see’ and *finne ut* ‘find out’). Predicates never found with embedded V–Neg include predicates of command (*passe på* ‘look after’) and desire (*håpe* ‘hope’). The latter supports claims from Hacquard & Lidz (2018), that attitude verbs expressing preferences do not take complements displaying main clause word order. *Passe på* ‘look after’ has a commanding function in seven occurrences, as shown in (28a); in the others, it describes someone’s actions, as shown in (28b).

Table 9. Occurrences of V–Neg and Neg–V in adjunct clauses in percentages (token numbers in parentheses).

Clause type/function	Complementizer	Neg–V	V–Neg	Total
Reason	<i>fordi, fordi at, for det at</i> 'because (that)'	52% (63)	48% (59)	122
Purpose/reason	<i>for at</i> 'for that'	78% (50)	22% (14)	64
Purpose/consequence	<i>så at, slik at, sånn at</i> 'so that'	76% (48)	24% (15)	63
Conditional	<i>hvis at</i> 'if that'	2	1	3
Concessional	<i>i og med at</i> 'since that'	1	0	1
	<i>når at</i> 'when that'	1	0	1
	<i>om at</i> 'if that'	2	0	2
Purpose/reason	<i>på grunn av at</i> 'because that'	4	1	5

- (28) a. Pass på [at det **ikke** er for tungt]
look after that it not is too heavy
 'Look after that it's not too heavy.'

(BigBrother)

- b. så passe de på [at den **ikkje** fær for langt]
then look they after that it not goes too far
 'Then they make sure that it doesn't go too far.'

(Ringstad)

4.1.3 Adjunct clauses

As shown in Section 2.1, the existing literature does not provide a clear picture of the status of V–Neg in adjunct clauses. Some adverbial clauses are argued to allow main clause phenomena in general (Haegeman 2012a), and the word order V–Neg/Adv is found in such clauses in Scandinavian languages other than Norwegian (Christensen et al. 2015), but this possibility is not examined for Norwegian. In the hope of contributing to settling this question, the current section presents all relevant findings of V–Neg in adjunct clauses in Norwegian.

The literature has mainly focussed on the distinction between 'because'-clauses and 'so that'-clauses. Table 9 provides counts for V–Neg and Neg–V in both environments, showing that these adverbial clauses seem to allow V–Neg in Norwegian. The V–Neg word order is firstly found in adverbial clauses embedded with a complementizer variation such as *fordi* 'because', *fordi at* 'because that', *for at* 'for that' or *for det at* 'for it that', as shown in (29). (I henceforth use *fordi* to refer to all these clause types except *for at* 'for that'-clauses.)

- (29) hadde låst rommet da [for det at jeg gidder **ikke** fyre
had locked room.DEF DM for it that I bother not heat
 opp hele huset]
up whole house.DEF
 '[I] had locked the room because I cannot be bothered to heat the whole house.'

(NoTa)

Faarlund et al. (1997:1041) state that clauses embedded under *for at* ‘for that’ always have the canonical embedded word order (Neg–V). The data in the present study invalidate that: 24% of embedded clauses with negation under *for at* display the V–Neg word order. However, it seems this complementizer still differs from all other variations of *fordi* when it comes to licensing the non-canonical word order, as the proportion of Neg–V vs. V–Neg under *for at* differs from that of other variations of *fordi*, as shown in Table 9.¹⁸ Clauses with negation embedded under *fordi* are split nearly equally between the word orders Neg–V and V–Neg.

V–Neg is also seen in adverbial clauses with the complementizer variation *så at* ‘so that’, *slik at* ‘such that’ or *sånn at* ‘so that’, as in (30), although Neg–V is more frequent in such clauses.

- (30) blitt ødelagt [sånn at de kunne ikke sende det]
 become broken so that they could not send it
 ‘[It has] been broken so that they couldn’t send it.’

(ScanDiaSyn)

These findings confirm and expand on Julien (2010), who finds V–Neg in ‘causal subjunctives’ such as *slik at* and *for(di) (at)*.

Waldmann (2014) investigates verb placement under the complementizers *for at* and *så at* in Swedish, and finds that V–Neg is used in respectively 77% and 33% of clauses with these complementizers. In Danish, the word order V–Adv is found in 89% of clauses with the complementizer *fordi* (Christensen et al. 2015:105). These numbers indicate that there might be a difference in the usage of V–Neg between Norwegian and Swedish, particularly in ‘for that’-clauses (although note that the distribution of V–Adv word order might be slightly diverging from Verb–Negation, since adverbs are found to behave differently in this context, as mentioned previously, e.g. Christensen et al. 2015).

Table 9 also shows that V–Neg is possible in other various contexts, such as conditional clauses with the complex complementizer *hvis at* ‘if that’ and concessional clauses with the complex complementizers *i og med at* ‘since that’, *når at* ‘when that’, and *om at* ‘if that’.

4.1.3.1 Adverbial clauses’ function and integration status

In Section 2.1.3, I introduced the claims that adverbial clauses allowing V–Neg (or MCP in general) are less integrated with the embedding clause than adverbial clauses disallowing it (Bentzen 2011, Haegeman 2012a). In this section, I look at whether these claims are confirmed by the corpus data.¹⁹

V–Neg should be allowed in less integrated (peripheral) *fordi* ‘because’-clauses and disallowed in clauses of a central type, following Bentzen (2011) and Haegeman (2012a). One way to test whether a clause is one type or the other is to look at the scope of a matrix negation: central clauses fall within the scope of matrix negation whereas peripheral ones do not (Haegeman 2012a:161).

I applied this diagnostic to the corpora occurrences of ‘because’-clauses where the embedding predicate contains a negation. I also extracted all clauses

with the simple complementizer *fordi* ‘because’ complete enough to perform such a test on (10 clauses with Neg–V and 13 clauses with V–Neg) and inserted a negation in the embedding clause. All clauses with V–Neg seem to be peripheral, as in (31), and all clauses with Neg–V seem central, as in (32), as expected.

- (31) Jeg takler ikke sånne folk [fordi de har
I deal.with not such people because they have
ikke ryggrad]
not spine
‘I cannot deal with such people because they don’t have a spine.’

(BigBrother)²⁰

- (32) Du blir ikke stemt ut [fordi dem **ikke** liker deg
you become not voted out because they not like you
men de stemte ...]
but they voted
‘You won’t be voted out because they don’t like you but they voted.’

(BigBrother)

The ‘because’-clause in (31) seems peripheral as the matrix negation does not scope over it: *fordi de ikke har ryggrad (ikke (jeg takler sånne folk))* ‘because they don’t have a spine (not (I deal with such people))’. In addition, it establishes a causal relation between the verbal action in the matrix clause and the speaker’s attitude towards it; it provides the speaker’s evidence for making a claim about not being able to deal with such people. This is in line with what Haegeman (2012a:162) describes for less integrated clauses.

The ‘because’-clause in (32) seems to be central and thus more integrated with the matrix clause for two reasons, as described by Haegeman (2012a:162). Firstly, it falls within the scope of the matrix clause negation: *ikke (du blir stemt ut (fordi de ikke liker deg))* ‘not (you will be voted out (because they don’t like you))’. This can be paraphrased as ‘You will be voted out, not because they don’t like you but for some other reason’. Secondly, the ‘because’-clause expresses a cause for the proposition in the matrix clause: the reason for someone being voted out.

In addition to the embedded clause’s level of integration with the matrix clause, other functions of adverbial clauses are claimed to influence (non-)licensing of V–Neg. For clauses embedded under a *slik at* ‘such that’ variation, it is claimed that if they express consequence, V–Neg will be allowed; if they express purpose, V–Neg is disallowed (Bentzen 2011). For many of the clauses in this study embedded under *slik at* ‘such that’, it is possible to pinpoint whether they are clauses of purpose or consequence.

All clauses with this complementizer containing the V–Neg word order seem to be clauses of consequence, as in (33a). Of the clauses of this type with the Neg–V word order that can be classified, the majority are clauses of purpose, as in (33b), and only a few seem to be clauses of consequence.

Table 10. Occurrences of word order combinations as a function of verb type in percentages (token numbers in parentheses).

	ScanDiaSyn		NoTa		BigBrother		Ringstad		Total	
Aux										
Neg-V	52%	(79)	70%	(51)	77%	(72)	86%	(12)	64%	(214)
V-Neg	48%	(74)	30%	(22)	23%	(22)	14%	(2)	36%	(120)
Main Verb										
Neg-V	57%	(124)	74%	(105)	78%	(70)	70%	(30)	67%	(329)
V-Neg	43%	(94)	26%	(37)	22%	(20)	30%	(13)	33%	(164)
Copula										
Neg-V	70%	(76)	66%	(40)	72%	(42)	81%	(13)	70%	(171)
V-Neg	30%	(33)	34%	(21)	28%	(16)	19%	(3)	30%	(73)

- (33) a. har vært opptatt med mange andre ting [sånn at jeg
have been busy with many other things such that I
 har ikke sett så mye]
have not seen so much
 ‘[I] have been busy with many other things so I haven’t seen a lot.’
 (NoTa)
- b. ... knyte veldig stramt [sånn at buksa ikke driver og
tie very tight so that trouser.DEF not keeps and
 glir ned] ...
sliding down
 ‘tie very hard so that the trousers don’t keep sliding down’
 (BigBrother)

These findings support the claims in Bentzen (2011).

4.2 Embedded verb types

Children have been shown to produce embedded V-Neg more frequently with auxiliary verbs than with main verbs (Håkansson & Dooley Collberg 1994, Heycock et al. 2013). In Section 2.1, I asked whether the same was true of adults. Table 10 shows the frequency of each word order with each verb type (main verb, auxiliary, and copula), for four corpora. If adult language is similar to child language, auxiliaries should occur more frequently than main verbs in V-Neg. Aggregating the total counts across all corpora, we observe that auxiliaries occur at a slightly higher rate with V-Neg (36%) than main verbs (33%) or copula verbs (30%). A chi-squared test of independence was run to determine whether the numerical trend reflects a statistically significant difference. The test included all occurrences of embedded clauses with negation where verb type could be determined across all corpora. The table had three rows corresponding to verb type: auxiliaries, main verbs and copula verbs, and two rows for word order:

V–Neg and Neg–V. The association between these two variables was not statistically significant, $\chi^2(2) = 3.05$, $p = .21$, suggesting that word order does not depend on verb type in adult productions.

4.3 Summary of findings

This section presented data from a large corpus study showing the distribution of embedded V–Neg in Norwegian. There are several findings. Firstly, some environments – relative clauses, indirect *wh*-questions and temporal and conditional clauses – never contain this word order. This finding supports claims by Hrafnbjargarson & Wiklund (2009) and Franco (2010). Several types of adverbial clauses frequently embed the word order V–Neg. This is particularly true for *fordi* ‘because’-clauses and *så at* ‘so that’-clauses (the latter contra Faarlund et al. 1997). *Så at* ‘so that’-clauses are found to embed V–Neg when they express consequence, but not purpose, supporting claims from Bentzen (2011) (contra Hrafnbjargarson & Wiklund 2009). Lastly, *fordi* ‘because’-clauses embedding V–Neg are found to be of a peripheral, or less integrated, type, as in Bentzen (2011) and Haegeman (2012a) (the latter not pertaining to embedded V–Neg specifically but MCP more generally). Additionally, even though verb type seems relevant to word order in child production (see Håkansson & Dooley Collberg 1994, Heycock et al. 2013), the current data show that verb type has no effect on word order in adult production.

5. Discussion

In the beginning of the paper, I questioned whether existing accounts of embedded V–Neg have discussed all relevant contexts for V–Neg. As I pointed out, identifying all environments where this phenomenon occurs is crucial for specifying the conditions that license it.

The empirical findings in this study confirm that there are restrictions on the distribution of embedded V–Neg: some clause types simply do not allow this word order in Norwegian. This is true for relative clauses and embedded questions, in addition to temporal and conditional embedded clauses. Despite occurring quite frequently with negation in the corpora, these clauses never display the word order V–Neg.²¹ Section 2 showed that the existing literature does not agree on which environments (dis)allow embedded V–Neg. In addition to confirming syntactic environments disallowing the word order, the present study establishes that this word order is found in a number of clause types previously argued to disallow it. This is true for complement clauses under negated matrix predicates, concessional *selv om* ‘even if’-clauses, and a number of adjunct clause types (particularly *fordi* ‘because’- and *slik at* ‘so that’-clauses). This study also establishes that embedded V–Neg is a robust phenomenon: 33% of all clauses allow it (as shown in Table 3). The same main clause phenomenon is found in very different environments, which raises the question of whether the mechanism responsible for the non-canonical word order is independent of clause type. I advocate an approach that examines the same licensing conditions for the same phenomenon and requires us to look clause-externally.

In Section 2.2, I pointed out that the existing literature on embedded V–Neg explains its licensing conditions TO SOME EXTENT. However, each study finds counterexamples to other studies. The data in the present study suggest that we must dismiss accounts of V–Neg as conditioned on lexical selection by the matrix verb (work building on Hooper & Thompson 1973): lexical selection accounts are not able to explain V–Neg in adjunct clauses, as they are not selected by the matrix predicate. As previously explained, the general notion in such approaches is that factivity blocks main clause phenomena (Hooper & Thompson 1973). It is also problematic for these approaches that V–Neg is found in the complement of NPs (here and in Julien 2010, in particular in consequence of degree-constructions) since it is the selecting verb that is thought to entail factivity, not an NP. The issue of optionality – the ability of a subset of embedded clauses to allow word order alternation – is also not addressed adequately in the literature: environments allowing V–Neg also allow Neg–V, so Neg–V is never disallowed. Assuming that something governs when each word order can occur, existing accounts face a problem. If embedded V–Neg is lexically licensed – by predicates that are non-factive, as in Hooper & Thompson (1973) or predicates that introduce discourse-new-ness, as in Caplan & Djärv (2017) – we are left with no explanation as to why a speaker sometimes chooses the canonical word order Neg–V and sometimes the non-canonical word order V–Neg under the same predicate. In (34), both word orders are found embedded under the matrix predicate *veit* ‘know’.

- (34) a. Du veit [at du **ikkje** får lov] (Neg–V)
you know that you not get permission
 ‘You know that you’re not allowed.’
 (Ringstad)
- b. Eg veit [at eg skulle **ikkje** synest det] (V–Neg)
I know that I should not think that
 ‘I know I shouldn’t think so.’
 (ScanDiaSyn)

I already dismissed lexical selection accounts based on the fact that adjunct clauses allow V–Neg. Now we see also that these accounts cannot explain word order alternation. However, similar problems arise for more pragmatically oriented approaches as well. Julien (2010) argues that assertion licenses V–Neg: an assertion is made by the speaker adding content to the conversation (see Stalnaker 1978), so it does not seem plausible to claim that a clause such as (35b) is asserted whereas (35a) is not.

- (35) a. Hun sa egentlig [at man **ikke** burde dusje] (Neg–V)
she said actually that one not should shower
 ‘She actually said that one shouldn’t shower.’
 (BigBrother)
- b. Da sa jeg [at jeg er **ikke** interessert] (V–Neg)
then said I that I am not interested
 ‘Then I said that I am not interested.’
 (BigBrother)

The same problem arises for accounts of MAIN POINT OF THE UTTERANCE (MPU) and AT-ISSUE-NESS. An environment that can be the MPU can also display V–Neg (Wiklund et al. 2009:1927).²² This entails that the same environment has the possibility of displaying Neg–V.²³ An adequate account of V–Neg’s licensing conditions needs to explain the possibility of alternating between two word orders in the subset of clauses allowing V–Neg. The facts laid out here suggest that we might need to look clause-externally and examine the broader discourse. Are certain properties of the discourse what licenses or bans V–Neg?

Caplan & Djärv (2017) suggest that discourse-familiarity is a relevant property: it disallows embedded V–Neg, making V–Neg licensed only in environments where the content of the utterance is not familiar. However, their analysis faces a problem since they claim that discourse-familiarity is a property of a selecting matrix predicate. Based on the data in the present study, we can rule out lexical selection as the primary licenser for embedded V–Neg. Discourse-familiarity in itself might license (or ban) embedded V–Neg, but not as a property of a matrix predicate. In that view, when a speaker expresses a proposition that contains familiar information, V–Neg is not licensed. Familiar information might be something already introduced in the discourse, or information presumed to be known to the participants in the conversation (COMMON GROUND, BACKGROUND INFORMATION, or PRESUPPOSED INFORMATION; see Stalnaker 1974, 2002). Thus, V–Neg is licensed in clauses expressing new information.

Assuming that a property of the discourse (such as familiarity) is relevant for licensing V–Neg covers adjuncts, as their ability to allow V–Neg will depend on whether or not the adjunct’s content is familiar. Additionally, it can explain why we find V–Neg under certain matrix predicates and not under others: the matrix predicate might be an expression of the larger discourse-pragmatic function. It then follows that certain discourse-pragmatic properties are typically expressed using verbs of a specific kind, i.e. information known in the discourse might be conveyed through matrix predicates known to be factive. Familiar information might be conveyed through non-factive predicates. Such an approach can potentially explain why the same matrix predicate can embed both Neg–V and V–Neg: a predicate such as *si* ‘say’ takes complements with both word orders, depending on whether the content of the complement clause is already introduced in the discourse. This suggestion could be compatible with that of Jensen & Christensen (2013), where V–Neg is a foregrounder, i.e. typically focussing new information.

Some of the findings of this study support the claim that familiar information facilitates the word order Neg–V and new information the word order V–Neg. Further specifying what property (or properties) of the discourse might be relevant for licensing V–Neg is a topic for future research, as the following discussion will rest heavily on this author’s introspection. Firstly, some argue that adverbial clauses differ with regard to factuality and presupposition (and thus also familiarity, following Stalnaker’s (1974) definition of presupposition).²⁴ The present study confirms that V–Neg is typically found in clauses of reason and purpose. Such clauses are claimed to be non-presupposed (Hengeveld 1998, contra Nordström 2010), i.e. express new information. V–Neg is not found in temporal clauses, which are claimed to be presupposed (Hengeveld 1998:353–357), i.e. express familiar information.²⁵

In addition, the current findings reveal a striking discrepancy within copula clauses: while almost none of the V–Neg clauses embedded under a copula were found with an extraposed subject, a large number of the Neg–V clauses were. Extraposed subjects can be said to contain presupposed, i.e. familiar, information (Kiparsky & Kiparsky 1971:148; Gentens 2015).²⁶ This seems to be the case in the extraposed subjects in (36), where the information in the embedded clauses seems known, and the speaker uses the matrix clause to assert something about the presupposed fact in the complement clause/extraposed subject. This is supported by corresponding structures in Kiparsky & Kiparsky (1971:148).

- (36) a. Det er veldig bra [at det **ikke** er så god mikrofon]
it is very good that it not is so good microphone
 ‘It’s very good that the microphone isn’t so good.’
 (Ringstad)
- b. Det er greit [at vi **ikke** kjøpte]
it is okay that we not bought
 ‘It’s ok that we didn’t buy.’
 (NoTa)

Lastly, it seems that ‘because’-clauses with the two word orders reveal a discourse relevant difference. Whereas adding a contrasting clause, such as *ikke fordi jeg er dum* ‘not because I am stupid’, at the end of the ‘because’-clause with the word order V–Neg in (37a) produces the infelicitous (38), contrasting the content of the Neg–V ‘because’-clause shown in (37b) is possible.²⁷

- (37) a. Det går dårlig på eksamen [fordi jeg har **ikke**
it goes bad at exam.DEF because I have not
 med kalkulator] (V–Neg)
with calculator
 ‘The exam will go badly because I didn’t bring a calculator.’
- b. Det går dårlig på eksamen [fordi jeg **ikke** har
it goes bad at exam.DEF because I not have
 med kalkulator] (Neg–V)
with calculator
 ‘The exam will go badly because I didn’t bring a calculator.’
- (38) Det går dårlig på eksamen [fordi jeg har **ikke**
it goes bad at exam.DEF because I have not
 med kalkulator], #ikke fordi jeg er dum
with calculator not because I am stupid
 ‘The exam will go badly because I didn’t bring a calculator, not
 because I’m stupid.’

The possibility of contrasting the content of the Neg–V clause, indicates that the utterer could have chosen several possible reasons for the exam going badly. This entails that the participants in the conversation have knowledge that there is a range of reasons why the exam might go badly. Since contrasting the content of the V–Neg clause (37a) yields an infelicitous result, this suggests that the

'because'-clause with V–Neg does not entail known information, and thus introduces new information or states facts.

Future research should further investigate this distinction between 'because'-clauses embedding the two word orders as well as the exact properties of discourse relevant to the licensing of embedded V–Neg.

It seems that by pursuing the idea that embedded V–Neg might be conditioned by discourse properties we are able to utilize knowledge from existing approaches, as clause internal pragmatics as well as clause types and matrix predicates will necessarily interact with the larger discourse. Thus, we are not dismissing the promising accounts already advanced, but incorporating what they have shown to be correct in an approach looking at licensing conditions from a different perspective. Furthermore, by looking for discourse properties as licensing conditions for this main clause phenomenon, we investigate the mechanism responsible for the same phenomenon in both complement and adjunct clauses.

6. Conclusion

This paper examines embedded clauses containing negation drawn from five Norwegian corpora. The aim was to determine the distribution of a main clause phenomenon found in Norwegian and other Scandinavian languages: the embedded word order V(erb)–Neg(ation). A complete overview of this word order's distribution was conducted to help explain which environments allow and disallow it.

The data revealed previously unknown environments allowing V–Neg (concessive clauses) and pinpointed the frequency with which V–Neg is found in thoroughly discussed environments such as complement clauses, and in more uncharted clauses such as adjuncts (purpose and reason clauses) and copula clauses. The latter two are uncharted territory in most previous literature on the topic. Based on these findings, I offered some suggestions for directions research on embedded V–Neg can take in the future – studying how the choice of word order is made based on the discourse-familiarity of its containing clause. I hope this work will stimulate further investigations into the connections between embedded V–Neg and discourse, and the function and structure of the clauses discussed in this paper.

Acknowledgements. I am grateful to Kristin Melum Eide, Dave Kush and Marit Westergaard for providing detailed and constructive comments on this article at various stages in the process. I also wish to thank Kaja Borthen and Andrew Weir for valuable and insightful discussions. I would also like to express my gratitude to two anonymous reviewers and the journal editor Gunnar Ólafur Hansson, whose feedback helped me greatly improve the paper. Any errors are of course my own.

Notes

1 Use of Verb–Negation word order in embedded clauses is considered a main clause phenomenon (MCP; Heycock 2006) because it is identical to the word order used in matrix clauses. Throughout the text, negation will be shown in bold in the examples, and the finite verb in italics.

2 <http://www.tekstlab.uio.no/nota/scandiasyn/>

3 Previous work has typically studied embedded V–Neg as part of a larger phenomenon – embedded V2. Embedded V2 often includes non-subject topicalization as well as the word order V–Neg. This paper focuses on V–Neg for two reasons: (i) it is not clear that non-subject topicalization and V–Neg are both V2 phenomena, as their underlying structures are much debated (e.g. Travis 1984, Vikner 1995) and so their distributions are best studied separately, and (ii) searching for production of non-subject topicalized elements in embedded clauses is not possible in the corpora used in this study.

4 In this article the term COMPLEMENTIZER refers to an element introducing a subordinate clause.

5 In this study, complement clause is defined as a clause that is subcategorized for by a lexical head, whereas adjunct clause is defined as a clause that modifies a lexical head without being subcategorized for by that lexical head (see Trask 1993:8, 51).

6 Hrafnbjargarson & Wiklund (2009) do not make this claim about V–Neg specifically, but they do claim that these clause types allow non-subject topicalization, which is treated in much literature as a phenomenon similar or identical to embedded V–Neg (see endnote 3).

7 Selection approaches such as Caplan & Djärv 2017, Djärv et al. 2017 resemble that of Hooper & Thompson (1973), but Hooper & Thompson only discuss main clause phenomena in English, and not the particular word order studied here.

8 The way I read Jensen & Christensen (2013), V–Neg focusses the embedded clause, such that a V–Neg clause is always MPU. Additionally, the Neg–V word order is neutral with respect to MPU, so Neg–V clauses are not necessarily MPU but they may be. This might explain the possibility of word order alternation within the same environments.

9 Caplan & Djärv (2017) apply a test to check whether a clause conveys new or familiar information: one imagines a clause uttered out of the blue, beginning with ‘Guess what’. Something that is already familiar in the discourse should then be infelicitous. If the matrix predicate is ‘say’, as in (i), new information can be conveyed in the following complement clause. A matrix predicate such as ‘appreciate’, as in (ii), must by necessity take a complement clause with some degree of familiarity, such that uttering this familiar complement out of the blue is infelicitous or odd. According to Caplan & Djärv (2017), V–Neg is allowed in a clause embedded under ‘say’, as in (i), and disallowed under ‘appreciate’, as in (ii).

(i) Guess what – they said on the radio *that Trump resigned*.
[Discourse-familiarity of embedded clause not required. V–Neg allowed.]

(ii) Guess what – #they appreciate *that Trump resigned*.
[Discourse-familiarity of embedded clause required. V–Neg disallowed.]

10 <https://www.hf.uio.no/iln/om/organisasjon/tekstlab/>

11 <https://chilides.talkbank.org/>

12 As there is no overview of the number of total utterances in the corpora utilized for this study, I searched for all utterances minimally containing a verb. Thus, ‘all utterances’ means all utterances of at least a verb, including incomplete utterances.

13 A reviewer pointed out that clauses without an overt complementizer might behave differently than clauses with a complementizer with regards to the word order they embed. While it would be interesting to include complementizer-less clauses in the present study and to compare them with clauses with overt complementizers, this must be left to future research.

14 The Norwegian reference grammar (Faarlund et al. 1997) argues that *for* ‘for’-clauses normally contain new information, and thus they are more independent than e.g. *fordi* ‘because’-clauses that typically contain known information (ibid.:1139). The independence of *for* ‘for’-clauses points to *for* ‘for’ being a conjunction connecting two main clauses rather than functioning as a subordinator.

15 For conditionals with the V–Neg word order, two results were obtained, but turned out to be obvious restarts.

16 Thirteen instances of relative clauses with the word order V–Neg were obtained. When examined more closely, all but one were excluded for the following reasons: restarts/pauses, the negation being a constituent negation or the relative pronoun and the verb being the collocation *som sagt* ‘as I said’. The remaining relative clause, in (i) below, displays V–Neg and cannot be excluded as a restart, but it seems to be an utterance consisting of fragments and pauses (the symbol # indicates pauses).

(i) Været var så dårlig at de som innbyggerne oppå # Newfoundland #
weather.DEF was so bad that they REL inhabitants on Newfoundland
venninna hans M13 som kom ikke.
friend.DEF his M13 REL came not

‘The weather was so bad that they who lived on Newfoundland... The friend of M13 who didn’t come.’
(ScanDiaSyn)

17 A reviewer points out that double negation is generally dispreferred by language users, leading to V–Neg embedded under a matrix negation being avoided. Determining whether a preference against double negation is the reason for the low number of such clauses can be done with a fuller survey of embedded V2 order with adverbials, but such a survey is beyond the scope of the current paper.

18 **Table (i).** Specification of numbers categorized as complementizer variation of *fordi* ‘because’. Occurrences of word order combinations in percentages (token numbers in parentheses).

Complementizer	Neg–V		V–Neg		Total
<i>for det at</i> ‘because (that)’	40%	(14)	60%	(21)	35
<i>fordi</i> ‘because’	55%	(36)	45%	(29)	65
<i>fordi at</i> ‘because (that)’	56%	(10)	44%	(8)	18

19 Even though I apply tests when investigating the clauses in this section, some degree of introspection is required. For this reason, the clauses discussed here should be subjected of future research including large scale acceptability judgements or the like, to make sure there is consensus among speakers on these intuitions.

20 The utterance is slightly rewritten for analysis purposes. The original utterance is *Sanne folk takler jeg ikke fordi de har ikke ryggrad i det hele tatt* ‘Such people I cannot deal with because they don’t have a spine at all’.

21 All mentioned clause types are found with well over 100 occurrences in the corpora searches, with the exception of embedded questions, where only two occurrences were found.

22 Wiklund et al. (2009) refer to V–Neg by the larger category V2, which also includes topicalizing of non-subject elements (see note 3 above).

23 Jensen & Christensen (2013) and Christensen et al. (2015) discuss how the word order V–Neg (V–Adv) can be used as a foregrounding signal, such that this is a function inherent in the main clause word order. However, they take environmental factors, such as the (non-)existence of overt complementizer, in support of a clause displaying a foregrounding signal. Therefore, one could say their approach considers both the function of using the word order V–Neg (V–Adv) and what environments facilitate it. As such, it seems reasonable to also include their approach to V–Neg as a foregrounding signal in this discussion.

24 Stalnaker’s (1974:200) definition of presupposition:

A proposition P is a pragmatic presupposition of a speaker in a given context just in case the speaker assumes or believes that P, assumes or believes that his addressee assumes or believes that P, and assumes or believes that his addressee recognizes that he is making these assumptions or has these beliefs.

25 Presupposition in adjuncts is more complicated than portrayed here, since V–Neg is not used in all clauses of reason and purpose, but is split between central and peripheral clauses of reason and purpose, as shown in Section 4.

26 Gentens (2015) discusses the presupposition/givenness status of extraposed OBJECTS. This might be a factor of extraposition as a function, independently of whether the extraposed element is the subject or the object.

27 I have slightly altered the utterance presented in (37) for analysis purposes. The actual utterance as found in the corpus reads as follows: *Men jeg kommer til å slite i dag altså for jeg har ikke du vet kalkulatoren min* ‘But I am going to have a hard time today because I don’t have, you know, my calculator’.

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Appendix. Detailed corpora findings and search information

Table A1. Search strings used for search in corpora. In all searches the maximum number of elements between the search elements was 1.

Search for	Search string
Embedded clauses with negation	complementizer + noun/pronoun + negation + verb
	complementizer + noun/pronoun + verb + negation
Embedded <i>wh</i> -questions with negation	verb + <i>wh</i> -word/ <i>om</i> 'if' + noun/pronoun + verb + negation
	verb + <i>wh</i> -word/ <i>om</i> 'if' + noun/pronoun + negation + verb
Relative clause	relative pronoun <i>som</i> + verb + negation
	relative pronoun <i>som</i> + negation + verb

Table A2. Geographical production by the dialectal areas. Occurrences of word order combinations in percentages (token numbers in parentheses).

Area	Neg-V		V-Neg		Total
The North	64%	(135)	35%	(75)	212
Troms and Finnmark	58%	(65)	42%	(47)	113
Northern Nordland	57%	(14)	33%	(7)	21
Southern Nordland	72%	(56)	27%	(21)	78
Trøndelag	55%	(32)	45%	(26)	58
Coastal Trøndelag	61%	(11)	39%	(7)	18
Inland Trøndelag	53%	(21)	48%	(19)	40
The West Coast	66%	(79)	33%	(39)	120
Northern West Coast	55%	(23)	43%	(18)	42
Southern West Coast	72%	(56)	27%	(21)	78
The South	38%	(12)	59%	(19)	32
The East	72%	(248)	28%	(96)	344
The Midlands	56%	(35)	43%	(27)	63

Table A3. All matrix predicates embedding a complement clause. Number of consequence of degree clauses in parentheses, i.e. 'N of clauses (N of consequence clauses)'.

Embedding verb	Neg-V number	V-Neg number
<i>bety</i> 'mean'	5 (1)	2
<i>bli</i> 'become'	17 (1)	15 (7)
<i>finne ut</i> 'discover'	2	3
<i>fortelle</i> 'tell'	1	4
<i>føle</i> 'feel'	7	2
<i>få beskjed om</i> 'get told'	2	2
<i>gjøre</i> 'do/make'	10	1
<i>gå</i> 'go, walk'	4 (2)	1 (1)
<i>ha + NP</i> 'have, own'	3	7 (4)
<i>huske</i> 'remember'	3	5
<i>høre</i> 'hear'	6	5
<i>innrømme</i> 'admit'	1	1
<i>love</i> 'promise'	2	1
<i>lære</i> 'learn'	1	1
<i>mene</i> 'mean'	9	5
<i>regne med</i> 'assume'	2	1
<i>sjå</i> 'see'	5	2
<i>si</i> 'say'	52	46
<i>skjønne</i> 'understand'	9	4
<i>skrive (+XP)</i> 'write' (+XP)	4	1
<i>snakke om</i> 'talk about'	3	2
<i>synes</i> 'have the opinion'	8	1
<i>tenke</i> 'think'	10	2
<i>tru</i> 'believe'	12	3
<i>vil + XP</i> 'want to + XP'	3	1
<i>vise (seg)</i> 'show (REFL)'	1	2
<i>vite</i> 'know'	22	12
<i>være</i> 'be'	216 (18)	119 (36)
<i>angre på</i> 'regret'	3 (1)	—
<i>bestemme</i> 'decide'	2	—
<i>bli til</i> 'become such that'	1	—
<i>bli å VP</i> 'going to VP'	1	—

Table A3. (Continued)

Embedding verb	Neg-V number	V-Neg number
<i>bære preg av</i> 'bear evidence of'	1	—
<i>ende med</i> 'end with'	1	—
<i>foreslå</i> 'suggest'	1	—
<i>forestille seg</i> 'imagine'	1	—
<i>forstå</i> 'understand'	4	—
<i>få høre</i> 'get to hear'	2	—
<i>få følelse/forståelse av</i> 'get a feeling/understanding'	3	—
<i>få tru/håpe</i> 'should believe/hope'	4	—
<i>garantere</i> 'guarantee'	2	—
<i>gjøre + XP</i> 'do + XP'	3	—
<i>gnage meg</i> 'bother me'	1	—
<i>ha med</i> 'include'	1	—
<i>ha en følelse av</i> 'have a feeling'	1	—
<i>holde styr på</i> 'keep track of'	1	—
<i>håpe</i> 'hope'	7	—
<i>irritere meg</i> 'annoy me'	2	—
<i>kan hende</i> 'could be'	4	—
<i>kan huske</i> 'can remember'	1	—
<i>kan love</i> 'can promise'	1	—
<i>kan risikere</i> 'can risk'	1	—
<i>kjenne</i> 'know, feel'	1	—
<i>komme (med) + XP</i> 'come (with) + XP'	3	—
<i>komme på</i> 'remember'	1	—
<i>kunne merke</i> 'could notice/feel'	1	—
<i>kødde med</i> 'joke with'	1	—
<i>late som</i> 'pretend'	2	—
<i>legge merke til</i> 'notice'	1	—
<i>legge skjult på noe</i> 'hide'	1	—
<i>lese</i> 'read'	1	—
<i>like</i> 'like'	1	—
<i>medføre</i> 'entail'	1	—
<i>måtte reparere</i> 'had to repair'	1	—
<i>må tilstå</i> 'must confess'	1	—

(Continued)

Table A3. (Continued)

Embedding verb	Neg-V number	V-Neg number
<i>nekte å tro</i> 'refuse to believe'	1	—
<i>oppleve</i> 'experience'	1	—
<i>overdrive</i> 'exaggerate'	1	—
<i>overbevise</i> 'convince'	1	—
<i>passer på</i> 'look after, make sure'	16	—
<i>plage meg</i> 'bother me'	1	—
<i>prege meg</i> 'mark me'	1	—
<i>prøve å fortelle deg</i> 'try to tell you'	1	—
<i>påstå</i> 'claim'	1	—
<i> reagere på det</i> 'react to it'	1	—
<i>redd for</i> 'afraid'	1	—
<i>satse på</i> 'bet on'	1	—
<i>skulle ha/sikre/bare mangle</i> 'should have/secure. . .'	3	—
<i>sjekke</i> 'check'	2	—
<i>snakke for meg sjøl</i> 'talk for myself'	1	—
<i>stå i avisen</i> 'say in the paper'	1	—
<i>svare</i> 'answer'	1	—
<i>sørge for</i> 'make sure'	2	—
<i>tilsi</i> 'indicate'	1	—
<i>vedde på</i> 'bet on'	1	—
<i>ønske</i> 'wish'	1	—
<i>beregne</i> 'estimate'	—	1
<i>danse</i> 'dance'	—	1 (1)
<i>forsikre seg om noe</i> 'ensure'	—	1
<i>få inntrykk av</i> 'get an impression'	—	1
<i>få tak i</i> 'catch'	—	1
<i>få til</i> 'manage'	—	1
<i>gi beskjed om</i> 'send a message'	—	1
<i>ha + VP</i> 'have + VP'	—	9
<i>hende</i> 'happen'	—	1
<i>komme</i> 'come'	—	1
<i>komme til</i> 'come to'	—	1
<i>kunne ha vært</i> 'could have been'	—	1

Table A3. (Continued)

Embedding verb	Neg-V number	V-Neg number
<i>leke</i> 'play'	—	1 (1)
<i>merke</i> 'notice'	—	1
<i>må innrømme</i> 'must admit'	—	2
<i>må tenke meg om</i> 'must think about'	—	1
<i>påpeke</i> 'point out'	—	1
<i>se ut som</i> 'look like'	—	1
<i>sette fingeren på</i> 'point out'	—	1
<i>skal love deg</i> 'will promise you'	—	1
<i>smake</i> 'taste'	—	1 (1)
<i>spise</i> 'eat'	—	1 (1)
<i>sykle</i> 'cycle'	—	1 (1)

Learning Embedded Verb Placement in Norwegian: Evidence for early overgeneralization

(Ringstad & Kush, to appear)

This paper is awaiting publication and is not included in NTNU Open

Children's acquisition of word order variation: A study of subject placement in embedded clauses in Norwegian

(Ringstad & Westergaard, submitted)

This paper is awaiting publication and is not included in NTNU Open

Appendix B

Consent form

Samtykkeerklæring for deltaking i forskingsprosjekt om barnespråk, NTNU

Eg har lese "Førespurnad om deltaking i forskingsprosjekt om barnespråk". Eg forstår informasjonen som blir gitt der, og gir mitt samtykke til at følgjande kan nyttast til språkforsking ved NTNU: lyd materialet mitt barn er med på i undersøkinga og opplysingar om mitt barn (fødselsdato, kjønn, morsmål (språk/dialekt), bustad og oppvekststad).

Stad: _____ Dato: _____

Underskrift føresette: _____

Informasjon om barnet:

Namn: _____ Fødselsdato: _____

Oppvekststad: _____ Bustad: _____

Morsmål språk/dialekt: _____ Kjønn: _____

Barnehage/Skole: _____ Alder søsken: _____

Dersom barnet har budd ein annan stad enn i Trondheim, kor var dette, kor lengje og kor gammalt var barnet? _____

Eg gir lov til å gjengi lyd materialet offentlig:

Eg gir lov til å kontakte meg for oppfølgingsspørsmål/-undersøkingar:

Informasjon om barnets føresette I:

Namn: _____ Fødselsdato: _____

Oppvekststad: _____ Bustad: _____

Morsmål språk/dialekt: _____ Kjønn: _____

Informasjon om barnets føresette II:

Namn: _____ Fødselsdato: _____

Oppvekststad: _____ Bustad: _____

Morsmål språk/dialekt: _____ Kjønn: _____

Telefon: _____

E-post: _____

Kommentarar eller ekstra informasjon? Bruk gjerne baksida.

Appendix C

**Approval to collect data
Norwegian centre for research data,
NSD**

Tina Louise Ringstad Larsen
Institutt for språk og litteratur NTNU

7491 TRONDHEIM

Vår dato: 05.09.2016

Vår ref: 48890 / 3 / AMS

Deres dato:

Deres ref:

TILBAKEMELDING PÅ MELDING OM BEHANDLING AV PERSONOPPLYSNINGER

Vi viser til melding om behandling av personopplysninger, mottatt 09.06.2016. Meldingen gjelder prosjektet:

48890 *Barns tileigning av verbplassering i norsk, doktorgradsprosjekt om korleis barn lærer morsmålet sitt.*

Behandlingsansvarlig NTNU, ved institusjonens øverste leder
Daglig ansvarlig Tina Louise Ringstad Larsen

Personvernombudet har vurdert prosjektet, og finner at behandlingen av personopplysninger vil være regulert av § 7-27 i personopplysningsforskriften. Personvernombudet tilrår at prosjektet gjennomføres.

Personvernombudets tilråding forutsetter at prosjektet gjennomføres i tråd med opplysningene gitt i meldeskjemaet, korrespondanse med ombudet, ombudets kommentarer samt personopplysningsloven og helseregisterloven med forskrifter. Behandlingen av personopplysninger kan settes i gang.

Det gjøres oppmerksom på at det skal gis ny melding dersom behandlingen endres i forhold til de opplysninger som ligger til grunn for personvernombudets vurdering. Endringsmeldinger gis via et eget skjema, <http://www.nsd.uib.no/personvern/meldeplikt/skjema.html>. Det skal også gis melding etter tre år dersom prosjektet fortsatt pågår. Meldinger skal skje skriftlig til ombudet.

Personvernombudet har lagt ut opplysninger om prosjektet i en offentlig database, <http://pvo.nsd.no/prosjekt>.

Personvernombudet vil ved prosjektets avslutning, 31.10.2020, rette en henvendelse angående status for behandlingen av personopplysninger.

Vennlig hilsen

Katrine Utaaker Segadal

Anne-Mette Somby

Kontaktperson: Anne-Mette Somby tlf: 55 58 24 10

Vedlegg: Prosjektvurdering

Dokumentet er elektronisk produsert og godkjent ved NSDs rutiner for elektronisk godkjenning.



SAMARBEID

Prosjektet er en nasjonal samarbeidsstudie. NTNU er behandlingsansvarlig institusjon. Personvernombudet forutsetter at ansvaret for behandlingen av personopplysninger er avklart mellom institusjonene. Vi anbefaler at det inngås en avtale som omfatter ansvarsfordeling, ansvarsstruktur, hvem som initierer prosjektet, bruk av data og eventuelt eierskap.

FORMÅL

Formålet med prosjektet er "å bidra til teori om kva som ligg til grunn for språktileigning samt å undersøke kva som av og til gjer verbplassering vanskeleg for barn."

INFORMASJON OG SAMTYKKE

Foreldre skal informeres skriftlig om prosjektet og samtykker til deltakelse. Informasjonsskrivet mottatt 02.09.16 er godt utformet.

BARNS DELTAKELSE

Merk at når barn skal delta aktivt, er deltakelsen alltid frivillig for barnet, selv om de foresatte samtykker. Barnet bør få alderstilpasset informasjon om prosjektet. Forsker må sørge for at de forstår at det er frivillig å delta og at de når som helst kan trekke seg dersom de ønsker det.

SENSITIVE OPPLYSNINGER

Det kan behandles sensitive personopplysninger om etnisk bakgrunn og/eller politisk/filosofisk/religiøs oppfatning.

INFORMASJONSSIKKERHET

Personvernombudet legger til grunn at forsker etterfølger NTNU sine interne rutiner for datasikkerhet. Dersom personopplysninger skal sendes elektronisk, bør opplysningene krypteres tilstrekkelig.

PUBLISERING

Dersom personopplysninger skal publiseres eller offentliggjøres må det foreligge eksplisitt samtykke fra den enkelte til dette.

PROSJEKTSLUTT OG ANONYMISERING

Forventet prosjektslutt er 31.10.2020. Ifølge prosjektmeldingen skal innsamlede opplysninger da anonymiseres.

Anonymisering innebærer å bearbeide datamaterialet slik at ingen enkeltpersoner kan gjenkjennes. Det gjøres ved å:

- slette direkte personopplysninger (som navn/koblingsnøkkel)

- slette/omskrive indirekte personopplysninger (identifiserende sammenstilling av bakgrunnsopplysninger som f.eks. bosted/arbeidssted, alder og kjønn)
- slette digitale lyd-/bilde- og videoopptak

Appendix D

Verb placement elicitation tasks, paper 2

Paper 2 is awaiting publicaton and this material is not included in NTNU Open

Appendix E

Subject placement elicitation task, paper 3

Paper 3 is awaiting publication and this material is not included in NTNU Open

ISBN 978-82-326-5863-3 (printed ver.)
ISBN 978-82-326-6992-9 (electronic ver.)
ISSN 1503-8181 (printed ver.)
ISSN 2703-8084 (online ver.)



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