

TRIGGERING V2: THE AMOUNT OF INPUT NEEDED FOR PARAMETER SETTING IN A SPLIT-CP MODEL OF CLAUSE STRUCTURE

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1. Introduction

In this paper I argue that children generally need relatively little input evidence to set word order parameters. Within a type of Split-CP model of clause structure, where different clause types are assumed to have different heads in the CP domain, I suggest that children make no global search of the primary linguistic data, but scan the input for designated word order cues, focusing exclusively on the relevant clause type. I investigate child and adult data from a dialect of Norwegian (Tromsø), where there is verb movement and verb second (V2) word order in some clause types, but not in others. The findings show that target-consistent word order is attested early in the different clause types, regardless of input frequencies, and that there is no overgeneralization of word order from one construction to another. This is argued to be due to the heads in the CP domain providing separate input cues for word order in the different clause types.

2. The Word Order of Norwegian

Norwegian is a V2 language with the finite verb generally appearing in second position in main clauses. This is standardly assumed to be the result of verb movement to the C position of the clause (see e.g. Vikner 1995). Since Norwegian is an SVO language, the V2 requirement in subject-initial declaratives is only visible if there is a sentence adverb or negation present. This is illustrated in (1), where the finite verb is assumed to have moved across negation. In non-subject-initial declaratives we see verb movement across the subject, as in example (2). Verb movement is also required in *yes/no*-questions, as shown in (3).

being preferred with full DP subjects and the verb *være* ‘be’, while non-V2 is typically chosen with pronominal subjects and all other verbs. Some examples from the adult speech sample are provided in (7) and (8).²

- (7) kor **er mitt fly?** (INV, file Ole.17)
where is my plane
 ‘Where is my plane?’
- (8) kor **vi lande** henne? (INV, file Ole.17)
where we land LOC
 ‘Where do we land?’

Summarizing, in the Tromsø dialect, there are some clause types that require V2 and some that require or allow non-V2, as illustrated in Table 1.

Table 1: Overview of clause types with V2 and non-V2 in Norwegian (Tromsø).

V2	Non-V2
Subject-initial declaratives with Neg/Adv	Embedded clauses with Neg/Adv
Non-subject-initial declaratives	Embedded questions
Yes/no-questions	Exclamatives
Certain matrix <i>wh</i> -questions	Certain matrix <i>wh</i> -questions

In a cue-based approach to acquisition and change, such as Lightfoot (1999, 2006), the evidence for verb movement in V2 languages will be expressed by the presence of a particular syntactic structure in the input. In a syntactic model with an unsplit CP, Lightfoot (2006, p. 86) formulates the cue for V2 syntax as in (9), which is a piece of structure “where a phrasal category occurs in the Specifier of a CP whose head is occupied by a verb.”

- (9) $_{CP}[XP\ cV\dots]$

Lightfoot’s cue-based approach to acquisition and change seems to be founded on very sound principles and historical data. However, I think that the cue as it is formulated in (12) is somewhat too simple and would cause confusion for a child learning the Tromsø dialect of Norwegian (and any mixed V2 grammar), where the evidence for verb movement is expressed in the input in some clause types and not in others. That is, the children are exposed to a C position that is only sometimes filled by a verb. In a grammar with an unsplit CP, one would expect that mixed input such as the target structures in the Tromsø dialect could cause overgeneralization from one clause type to another,

depending on the frequency of the cue in the primary linguistic data the child is exposed to. The next section will therefore look at the frequency of the various clause types in some typical child-directed speech.

3. Input Frequencies

In order to get an indication of what child-directed speech may consist of in terms of frequency of syntactic constructions, a sample of the adult material from the child language corpus (see section 4 below) was investigated in detail. This is the production of the investigator in a one-hour recording of spontaneous conversation with a child around the age of two and a half. In this file, the investigator produced a total of 793 utterances, out of which there were 668 complete (matrix and embedded) clauses. The different clause types and corresponding frequencies are provided in Table 2.

Table 2: Clause types with V2 and non-V2 in a sample of child-directed speech, the investigator in the file Ole.14 (age of child 2;6.21), with percentages calculated relative to the total number of complete (matrix and embedded) clauses (N=668).³

V2		Non-V2	
Subject-initial declaratives with Neg/Adv	6.4% (43)	Embedded clauses with Neg/Adv	0.9% (6)
Non-subject-initial declaratives	19.6% (131)	Embedded questions	1.6% (11)
Yes/no-questions	28.4% (190)	Exclamatives	1.0% (7)
Certain <i>wh</i> -questions	2.4% (16)	Certain <i>wh</i> -questions	4.2% (28)
Total evidence for V2	56.8% (380)	Total evidence for non-V2	7.7% (52)

As we see from Table 2, the most frequent sentence types are *yes/no*-questions and non-subject-initial declarative main clauses, which make up as much as 28.4% and 19.6% of all complete clauses in the file respectively. In addition, there is 6.4% evidence for verb movement in subject-initial declaratives containing negation or an adverb, as well as a number of *wh*-questions with V2, making the total evidence for V2 word order in the input sample reach a percentage of 56.8%.

The evidence for non-V2 in the constructions that require this word order is much more sparse. Embedded *wh*-questions are very infrequent, attested only 1.6% in the adult data. Exclamatives are even less frequent, occurring 1.0% in the sample, while *wh*-questions with non-V2 make up 4.2% of the total number of complete sentences. Embedded declaratives with negation or an adverb are

the least frequent of all non-V2 constructions, occurring in only 0.9% of the sample. This means that altogether the evidence for non-V2 word order is attested in 7.7% of the input data, considerably lower than the evidence for V2. However, there is also one example of a negated non-V2 main *wh*-question in the file, increasing the evidence for the lack of verb movement across negation or adverbs in Norwegian, but only by 0.1% (and is thus not included in Table 2). This example is provided in (10).⁴

- (10) kem som **ikkje får** kjøre? (INV, file Ole.14)
who that not gets drive
 ‘Who doesn’t get to drive?’

The sample of adult data reported here is of course very small, and furthermore, only produced by one person. However, similar findings have been attested for V2 constructions in much larger samples of Swedish input data in Josefsson (2004). A larger sample of the Norwegian input data on the non-V2 constructions was investigated in Westergaard&Bentzen (2005), and the frequencies were found to be parallel to the findings in the small sample investigated here.

Given these frequencies in the input sample, it seems safe to conclude that there is ample evidence for V2 in the input to North Norwegian children, while the evidence for the non-V2 constructions is relatively sparse. Based on frequency, it could therefore be expected, in a model with an unsplit-CP, that there might be some overgeneralization of V2 in early child language. In the next section, we will therefore turn to the production of the Norwegian children.

4. The Child Data

The corpus used for this study was collected in Tromsø in 1997/98 and consists of altogether 70 recorded sessions of three children, most of them lasting about an hour. Table 3 gives an overview of the corpus, specifying the age of the children and the total number of files and child utterances.

Table 3: Overview of the Norwegian child language corpus, Tromsø dialect.⁵

Name of Child	Age	Files	Child Utterances
Ina	1;8.20-3;3.18	Ina.01-27	20,071
Ann	1;8.20-3;0.1	Ann.01-21	13,129
Ole	1;9.10-2;11.23	Ole.01-22	13,485
Total			46,685

As expected from the input frequencies, V2 word order is attested from the earliest occurrences of multi-word utterances (see also Westergaard 2005a). This is illustrated by the subject-initial declarative with negation in (11), the non-subject-initial declarative in (12), and the *yes/no*-question in (13).

- (11) ho mamma **er** **ikke** på jobb. (Ole, age 1;10.0)
DET mom be.PRES not at work
 ‘Mom is not at work.’
- (12) så **tegne** **æ** mamma. (Ina, age 1;10.4)
then draw.INF/PRES I mommie
 ‘Then I draw mommie.’
- (13) **ser** **du** nokka? (Ann, age 2;1.7)
see.PRES you something
 ‘Do you see anything?’

Furthermore, the children were found to produce *wh*-questions with both V2 and non-V2 from a relatively early age, with the same patterns for subject and verb types as in the adult grammar, as illustrated in (14) and (15), cp. examples (7) and (8) from the adult data. Given the inconsistent and relatively sparse input evidence for the word order in *wh*-questions, this suggests that children are sensitive to patterns of information structure from early on (see Westergaard 2003, 2005a).

- (14) kor **e** **babyen**? (Ina, age 2;1.0)
where be.PRES baby.DEF
 ‘Where is the baby?’
- (15) ka **du skal** finne? (Ina, age 2:0.5)
what you shall find
 ‘What do you want to find?’

But what about the other non-V2 constructions that are attested even less frequently than the *wh*-questions in the input? Embedded questions, which were found in 1.6% of the input sample, appear in the child corpus with target-consistent non-V2, as illustrated in (16), cp. example (5) from the adult data. That is, there is no evidence of overgeneralization from main clause questions. Exclamatives, which are even less frequent in the input data, are also infrequent and appear relatively late in the child data. Nevertheless, exclamatives occur with non-V2 as soon as they appear in the children’s own production, as shown in (17), cp. example (6) above.

- (16) se her ka **Ina gjør**. (Ina.04, age 1;11.22)
look here what Ina does
 ‘Look here what Ina is doing.’
- (17) kor store mage **han har**. (Ina.27, age 3;3.18)
where/how big stomach he have.PRES
 ‘What a big stomach he has!’

Finally, we will consider embedded clauses containing negation or an adverb, where the target language requires non-V2. Although there are relatively few embedded clauses in the child corpus, due to the young age of the children, a number of cases of overgeneralization of V2 word order are attested, as illustrated in (18), cp. example (4) above (see also Westergaard 2005a). Another construction where the target language does not have verb movement across negation or an adverb is the non-V2 main clause *wh*-questions, as was shown in (10) above. In the child corpus there is only one such question containing negation, and in this example the verb has indeed moved across negation. Thus, the word order of (18) and (19) indicates that there *is* overgeneralization of verb movement in these cases. Similar examples are attested in the production of somewhat older children acquiring the Tromsø dialect in Bentzen (2003) and Westergaard&Bentzen (2005), where it is shown that these children move the verb past negation in several embedded non-V2 contexts, *that*-clauses, relative clauses, and adverbial clauses, as well as the non-V2 main clause *wh*-questions. A small experiment reported on in Westergaard&Bentzen (2005) suggests that children do not consistently produce the target non-V2 word order in these constructions until after the age of six.

- (18) det er ho mamma som **har** **også** tegna. (Ina, age 3;2.05)
it be.PRES DET mommie who have.PRES also draw.PART
 ‘It is mommie who has also drawn.’
 Target form: Det er ho mamma som også har tegna.’
- (19) kem som **vil ikkje** være ilag med han? (Ina, age 3;1.8)
who that will not be together with him
 ‘Who doesn’t want to be with him?’
 Target form: Kem som ikkje vil være i lag med han?

To summarize this section, all the clause types listed in Table 1 appear in the child data with target-consistent word order, the ones in the left-hand column with V2, the ones in the right-hand column with non-V2. Thus, regardless of the very different input frequencies, there seems to be no overgeneralization from one clause type to another. The only exception to this is the appearance of verbs in front of negation or adverbs in non-V2 contexts such as embedded clauses

and main clause non-V2 *wh*-questions. In the next section, I account for the child data within a Split-CP approach to clause structure, where different clause types have different heads in the CP domain, and consequently different cues for verb movement.

5. Syntactic Analysis

The syntactic framework adopted in this paper is a Split-CP model of clause structure, originally developed in Westergaard&Vangsnes (2005) and somewhat revised in Westergaard (2005a). The model is inspired by Rizzi (1997, 2001) and other work on Italian syntax (e.g. Poletto 2000 and Benincà&Poletto 2004), but is in many ways different from these models. For example, the ForceP of Rizzi's model is replaced by different heads for different clause types. Some of the relevant heads present in the CP domain of the clause are given in (20):

(20) $_{CP} [(Int^\circ \text{ Pol}^\circ \text{ Top}^\circ \dots) \dots [(Wh^\circ) \text{ Fin}^\circ \text{ IP} [\dots$

Not all functional heads are present in all clauses, and clause typing is dependent on the topmost head in the structure - e.g. if the head Int° is present, the sentence is a *wh*-question, whereas if the head Top° is present, the sentence is a declarative, either a subject-initial or a non-subject-initial clause, see Table 4. As embedded clauses do not have the same illocutionary force as main clauses, declaratives are assumed to be bare $FinPs$ and embedded questions bare $WhPs$.

Table 4: Examples of syntactic heads and corresponding clause types.

Syntactic Head	Clause Type
Int°	<i>Wh</i> -questions
Pol°	<i>Yes/no</i> -questions
Top°	Declaratives
Fin°	Embedded declaratives
Wh°	Embedded questions
etc.	

V2 word order in this model is the result of an EPP *head* feature ($[X^\circ_{EPP}]$) on syntactic heads in the CP domain, which attracts the verb. This means that there may be several sources for V2 word order, and this accounts for different V2 grammars. For example, English must have a requirement for a filled Int° head, but no such requirement for a filled Top° , and this accounts for subject-auxiliary

inversion in questions and the lack of it in declaratives. Certain dialects of Norwegian, e.g. Nordmøre (see e.g. Westergaard&Vangsnes 2005), exhibit V2 in all types of declaratives but not in any kinds of *wh*-questions. These dialects are therefore assumed to have the EPP head feature on Top° but not on Int° , exactly the opposite requirements of English. The head involved in exclamatives must lack the EPP feature in Norwegian, while e.g. Danish presumably has it, since this language displays verb movement in exclamatives. Finally, the lack of the EPP feature on the Fin° and Wh° heads in Norwegian accounts for the non-V2 word order in embedded contexts. By comparison, Belfast English displays V2 in embedded questions (see Henry 1995), and must therefore have the EPP feature on the Wh° head.

The word order of the Tromsø dialect, illustrated in section 2, can thus be accounted for by the presence or absence of the feature $[\text{X}^\circ_{\text{EPP}}]$ on different heads in the CP domain: Those clause types which display V2 are endowed with this feature, while those clause types which do not, lack it. The two different word orders possible in *wh*-questions with monosyllabic question words must then be due to the requirements of a lower CP head, which attracts elements with low information value (pronominal subjects or *be*), see Westergaard (2005a). This could e.g. be the lower Top° head of Rizzi (1997, 2001).⁶ The reason why children acquire this so quickly, as was illustrated by examples (14) and (15) in section 4, is argued to be an early sensitivity to information structure (see Westergaard 2003, 2004, 2005a).

The functional architecture outlined in Table 4 is assumed to be provided by UG, while children obviously have to learn from the input which CP heads have the $[\text{X}^\circ_{\text{EPP}}]$ feature. In this process, they rely on certain cues in the input, in the sense of Lightfoot (1999, 2006).⁷ Recall that he formulated the cue as in (9), repeated here:

$$(9') \quad \text{CP}[\text{XP}_{\text{c}}\text{V}...] \quad (\text{from Lightfoot, 2006, p. 86})$$

Within the present split-CP model, there must be several cues expressing V2 word order, depending on clause type. For example, the cue for V2 in *wh*-questions must be a structure with a *wh*-element followed by a verb filling the head position in the IntP , while the cue for V2 in declaratives must be an XP followed by a verb in the TopP . English-speaking children will encounter the former in the primary linguistic data that they are exposed to, but not the latter, while children growing up in Nordmøre will have evidence for the latter, but not the former. Both English and Norwegian-speaking children will be exposed to the cue for verb movement in *yes/no*-questions, while this will not be the case in e.g. standard Italian, where the word order of *yes/no*-questions is identical to

that of declaratives. The cues for verb movement to the FinP and WhP will not be manifested in the input to Norwegian children, while the latter should be present in the input to children acquiring Belfast English. Table 5 gives a first approximation of some of the cues for V2 syntax.

Table 5: Examples of cues for V2 in a split-CP model.

Cue	Presence in the Input
IntP[<i>wh</i> Int°V...]	+ (English, Standard Norwegian) - (Nordmøre dialect)
TopP[XP Top°V...]	+ (Norwegian, German etc.) - (English, Italian etc.)
PolP[Pol°V...]	+ (Norwegian, German, English etc.) - (Italian)
WhP[(<i>wh</i>) Wh°V...]	+ (Belfast English) - (Norwegian, English)
etc.	

According to this model, then, there is no global cue for V2 syntax, but separate cues for each clause type. When children scan the primary linguistic data for word order cues, this is presumably a selective process where only a particular clause type is relevant. When searching the linguistic input for possible cues for verb movement to Int°, for example, children will only consider *wh*-questions and ignore other clause types such as declaratives or imperatives. Likewise, only *yes/no*-questions would be focused on for a possible cue for the Pol° head. This means that no transfer of feature values is predicted from one clause type to another. That is to say, realizing that there is a [X°_{EPP}] head feature on e.g. Pol° does not make the child grammar automatically assume that the feature specification is the same on other heads in the CP domain.⁸

But how do we then account for the relatively persistent overgeneralization of verb movement across negation or adverbs attested in embedded contexts and non-V2 *wh*-questions, illustrated in (18) and (19) in section 4? In Westergaard (2005a) and Westergaard&Bentzen (2005) this is argued to be due to an economy principle in language acquisition, which causes the child grammar to move elements only as high up in the structure as there is evidence for in the input. In the sample of child-directed speech (see Table 2), there is ample evidence of verb movement across negation or adverbs in subject-initial declarative main clauses, and given the tendency for economy, the child grammar will only move the verb to the lowest position which ensures that it

appears in front of these elements, which is a head in the IP domain. This means that the child grammar misinterprets the word order in subject-initial declaratives in Norwegian to be the cue for V-to-I movement.

Missetting this parameter to the wrong value will cause a word order where the verb precedes negation or adverbs also in non-V2 contexts, i.e. all embedded clauses and main clause non-V2 *wh*-questions. In all other constructions, the verb will move to a C-head, and this will make verb movement to the IP domain invisible. In Westergaard&Bentzen (2005), it is argued that the children will only reset this parameter after they have been exposed to a large number of embedded contexts where the verb follows negation or adverbs, and given that these constructions are extremely infrequent in the input (cf. Table 2), this is a process that may take some time.

For the purpose of the present paper, what is crucial about this word order overgeneralization is that it occurs in the IP domain, where all clause types are assumed to have identical projections. Thus, transferring a feature value from one clause type to another, in this case from subject-initial declarative main clauses to non-V2 *wh*-questions and all embedded contexts, would in fact be expected. This is in contrast to the CP domain, where all clause types are assumed to have different heads. Consequently, the lack of word order overgeneralization in this domain is expected.

Finally, if this idea of a selective cue-searching process is on the right track, then that would also mean that the cues for word order are much more robustly expressed in the various constructions than the percentages in Table 2 suggest. In fact, for most of the functional heads, e.g. *yes/no*-questions or exclamatives, the cue would be expressed in 100% of the relevant utterances in Norwegian. This idea of a selective search may thus also explain why word order tends to be acquired so early and why there in general does not seem to be any overgeneralization of feature values from one construction type to another.

6. Conclusion

So how much triggering experience is needed to set word order parameters? The answer to that question is presumably “very little”, as even clause types that are extremely infrequent in typical child-directed speech are acquired with target-consistent word order from early on. The Split-CP model that has been presented in this paper accounts for the early acquisition of word order in languages where different clause types have different word orders, such as the Tromsø dialect of Norwegian. If children are assumed to focus exclusively on the relevant clause type when searching the primary linguistic data for syntactic cues, then this also explains why there is no word order overgeneralization from one clause type to another.

Notes

¹ V2 word order is possible, but not preferred, in certain embedded clauses in Norwegian, mainly in complements to so-called bridge verbs (see Vikner 1995 and Bentzen 2003).

² The adult speech sample has been taken from one of the investigators in the acquisition corpus (see sections 3 and 4).

³ The figures in Table 2 do not add up to 100%, as constructions that do not provide evidence for either word order have been disregarded here, e.g. imperatives or subject-initial declaratives without Neg/Adv.

⁴ This is an example of a subject question, which in the Tromsø dialect requires the insertion of the relative complementizer *som* in second position. Subject questions thus always occur with non-V2 word order. The element *som* is also obligatory in embedded subject questions, in the dialect as well as in standard Norwegian.

⁵ Apart from 10 files that have been collected and transcribed by the author, the corpus has been collected by Merete Anderssen.

⁶ In Westergaard & Vangsnes (2005) and Westergaard (2005a) the optional word order of *wh*-questions in Norwegian dialects was argued to be due to the Foc^o head.

⁷ This is in contrast with what is argued in some recent work, e.g. the variational model of grammar competition in Yang (2002), where children are assumed to pay attention to statistical frequencies in the input and keep several grammar types in the hypothesis space for an extended period of time. According to his model, V2 falls into place relatively late, around age 3;0-3;3.

⁸ In Westergaard (2005b) I discuss the loss of V2 in declaratives in Old and Middle English, and in Westergaard (2005c) the optional word order in *wh*-questions in two present-day Norwegian dialects is given an analysis in terms of a diachronic change in progress towards loss of V2. In both situations, only one of the CP heads is affected by the change (Top^o in English, Int^o in Norwegian), providing some further support for this type of Split-CP approach.

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