

Derivational contrasts in Dutch and French

Evidence from the acquisition of Long Distance Wh-questions*

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1. Introduction

This paper focuses on a number of contrasts in the acquisition of Long Distance Wh-questions in Dutch and French. The results of an elicited production task with Dutch and French-speaking monolingual children show that the former produce much more non-standard constructions, like Wh Copying and Partial Movement questions, than the latter. Taking into account the complexity of the derivation, the non-standard constructions involve less complexity than their standard Wh fronted counterparts. In this light, it is rather surprising that the French-speaking children do not prefer the less complex Wh *in situ* and Partial Movement constructions. I assume that these constructions are possibly more complex than they seem at first sight, in showing that derivational complexity interacts with syntax-external factors such as processing load and interpretational requirements.

This paper is structured as follows. First, I give a description of the Derivational Complexity Hypothesis and its implications for Long Distance Wh-questions. I then present and discuss the acquisition data, focusing on the issue of derivational complexity.

2. Derivational Complexity and Long Distance Wh-questions

In the last ten to fifteen years, several researchers have proposed that language development is constrained by economy principles (cf. Van Kampen 1997, Hulk & Zuckerman 2000, Soares 2006 & Zuckerman 2001, among others). What these proposals have in common is the idea that certain derivations, e.g. those involving syntactic movement, are more costly, or less economical, than others, and are therefore avoided in the first stage(s) of language acquisition. The Derivational

Complexity Hypothesis (cf. Jakubowicz 2005, Jakubowicz & Strik 2008 for its most recent version) is also based on the notion of economy. Its basic idea is that syntactically less complex derivations are target-consistent (i.e. correctly spelled out at the interfaces) earlier than more complex ones. General developmental constraints, such as working memory, should be sensitive to the computational complexity of the derivation. Derivational complexity can be calculated by a metric, according to which a) Merging α_i n times gives rise to a less complex derivation than merging α_i $(n+1)$ times, and b) Internal Merge of α gives rise to a less complex derivation than Internal Merge of $\alpha + \beta$ (Jakubowicz 2005).

With respect to Wh-questions, the metric states that the child is sensitive to the number of times that a Wh-word is merged and to the number of constituents undergoing Internal Merge. This means that, according to clause A, root and Partial Movement (henceforth PM) questions (involving no or one Internal Merge of the Wh-word) will emerge before Wh fronted Long Distance (henceforth LD) questions (involving two operations of Internal Merge). Furthermore, according to clause B, questions where only one constituent (the Wh-word) undergoes Internal Merge into the left periphery of the clause will emerge before questions where two constituents (the Wh-word and the inflected verb, in questions with subject-verb inversion) undergo Internal Merge. This is not relevant for Dutch, where the V2 property of the target language requires subject-verb inversion.

The Derivational Complexity Metric makes it possible to set up a hierarchy of the different types of Wh-questions in Dutch and French, and thus predict the order in which these constructions should emerge. This is particularly interesting for French, where a large variety of different Wh-constructions is attested. It is also useful in the comparison of typologically different languages, as is done in the present study. The tables in (1) and (2) provide a possible hierarchy of LD Wh-questions for Dutch and French respectively, in order of increasing complexity. In each of the examples the locative Wh-word *waar/où* (*where*) is used. In conformity with the Minimalist Program, I assume that the left periphery of each Wh-question contains a Wh-feature and that Wh-movement takes place in order to check this feature. In (1) and (2) I give simplified syntactic representations, with the Internal Merge of the Wh-word represented in boldface and the Internal Merge of the inflected verb underlined. Constituents (related to the derivation of a Wh-question) which are directly merged into the structure have been italicised. Copies created by Internal Merge of the corresponding constituent are indicated with a trace (*t*). It has also been indicated to which speech register the construction belongs, and whether it is attested in the adult grammar.

(1) Hierarchy of LD Wh-questions attested in Dutch-speaking children

Construction	Example	Register	Attested in adult language
1. PM with scope-marker	<i>Wat denk_j je t_j [waar_i ik t_i woon?]</i> ¹ what think you where I live	dialectal/ informal	+
2. Wh Copying	<i>Waar_i denk_j je t_j [waar_i ik t_i woon?]</i> ² where think you where I live	dialectal/ informal ³	+
3. Wh fronted with SV inv.	<i>Waar_i denk_j je t_j [t_i dat ik t_i woon?]</i> where think you that I live	neutral	+

(2) Hierarchy of LD Wh-questions attested in French-speaking children

Construction	Example	Register	Attested in adult language
1. <i>Wh in situ</i>	Tu penses [<i>que j'habite où?</i>] you think that I live where	informal ⁴	+
2. PM without scope-marker	Tu penses [<i>où_i que j'habite t_i?</i>] you think where that I live	— ⁵	—
3. Wh cleft in embedded clause	Tu penses [<i>que c'est où_i que j'habite t_i?</i>] you think that it is where that I live	informal	+
4. PM with scope-marker	<i>Qu'est-ce que tu penses [où_i j'habite t_i?</i>] what is it that you think where I live	—	—
5. Wh Copying	<i>Où_i tu penses [où_i j'habite t_i?</i>] where you think where I live	—	—
6. Wh fronted without SV inv.	<i>Où_i tu penses [t_i que j'habite t_i?</i>] where you think that I live	informal	+
7. Wh fronted with <i>est-ce que</i> ⁶	<i>Où est-ce que tu penses [t_i que j'habite t_i?</i>] where is it that you think that I live	neutral	+
8. Wh fronted cleft	<i>C'est où_i que tu penses [t_i que j'habite t_i?</i>] it is where that you think that I live	informal	+
9. Wh fronted with SV inv. ⁷	<i>Où_i penses-tu t_j [t_i que j'habite t_i?</i>] where think you that I live	formal	+

A comparison between (1) and (2) shows several differences between Dutch and French. First, subject-verb inversion is obligatory in Dutch but optional in French. Second, *Wh in situ* and *Wh cleft* constructions are possible in French but not in Dutch. Third, PM and *Wh Copying* are possible in adult Dutch but not in French. In what follows, I will show that these differences can explain (at least in part) the contrasts between Dutch and French children with respect to their LD Wh-questions.

3. Elicited production of Long Distance Wh-questions

3.1 Methodology

The elicited production task presented in this paper is inspired by the work of Thornton (1990) on English LD questions and by earlier work on French LD questions (cf. Strik 2003, 2007).⁸ The same protocol has been developed for both Dutch and French so as to make possible a systematic comparison between these languages. The participants have to ask questions to Nina, a robot puppet on a computer screen, who is often interrupted by her little brother and sister. When Nina is interrupted, the child is invited to ask her what her little brother or sister *said*. This means that the matrix verb of the LD questions is expected to be *say*. The task includes four LD test conditions, with object, subject, locative and reason Wh-words. It counts six items per condition, which makes the maximum number of LD Wh-questions that can be produced by each participant 24. Below, I present an example of a locative Wh test item as it is introduced by the investigator, in both Dutch and French.

- (3) a. Ah Nina weet niet meer **waar** de vis zwemt, maar misschien dat Billy en Lala het zich nog goed herinneren. Vraag aan Nina waar Billy zei dat de vis zwemt.
- b. Ah Nina sait plus où le poisson nage, mais peut-être que Billy et Lala se rappellent bien. Demande à Nina où Billy a dit que le poisson nage.
 “Ah Nina doesn’t know anymore where the fish is swimming, but maybe Billy and Lala remember. Ask Nina where Billy said that the fish is swimming.”⁹

Eight groups participated in the task: three groups of monolingual children from 3, 4 and 6 years old and one adult control group in each language. The age range, mean age and Standard Deviation (S.D.) of the different groups are given in (4).

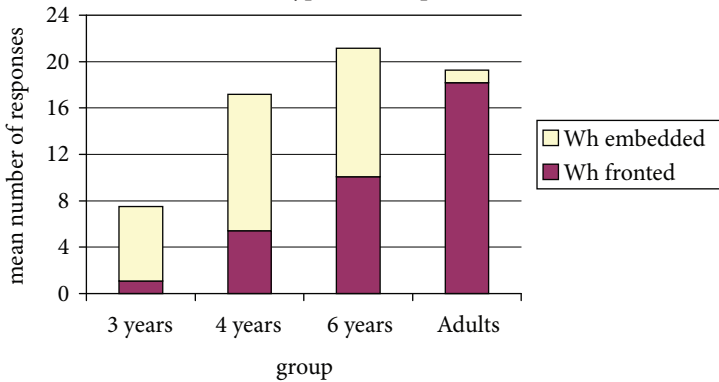
(4) Subjects

Group	N	Age range	Mean age	S.D.
3 years – Fr	12	3;3–3;7	3;5	0,13
3 years – D	10	2;10–3;8	3;3	0,37
4 years – Fr	12	4;0–4;7	4;4	0,2
4 years – D	12	4;2–4;11	4;7	0,3
6 years – F	12	6;5–6;9	6;6	0,14
6 years – D	12	6;7–6;11	6;9	0,16
Adults – Fr	12	21–34	27;6	3,6
Adults — D	12	24–29	26;5	1,3

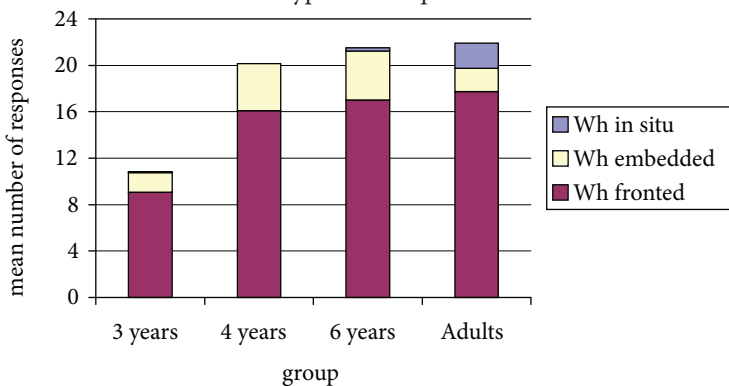
3.2 Results

A total of 766 Dutch (by 46 subjects) and 892 French (by 48 subjects) LD Wh-questions were produced. The figures in (5) and (67) show the mean number of overall responses. I distinguish between two types of response for Dutch and three for French. The first type corresponds to target-consistent Wh fronted LD questions (with and without subject-verb inversion). The second type, which I refer to as “Wh embedded”, contains different types of LD questions with a Wh-word at the beginning of the embedded clause: PM with a scope-marker and Wh Copying questions, and, for French, also PM without a scope-marker and questions with an embedded Wh cleft. The third type is attested in French only and includes Wh *in situ* questions.

(5) Mean number of different types of LD questions in Dutch



(6) Mean number of different types of LD questions in French



Both languages display a significant evolution from 3 to 4-year-old children ($U = 12$, $p < .01$ for Dutch; $U = 19$, $p < .01$ for French). The development in Dutch is more gradual than in French: in Dutch there is also a significant difference between 4

and 6-year-old children ($U = 37, p < .05$). The French 4-year-old children are already closer to the 6-year-old ones. In general, the French children produce more LD questions than the Dutch children, but this difference is not significant.

With respect to the response type, in Dutch, there is a clear contrast between the children and the adults, in that the children produce much more “Wh embedded” questions than the adults.¹⁰ In each of the groups these questions are more frequent than Wh fronted LD questions. In French, on the other hand, Wh fronted LD questions are the most frequent, for both children and adults. There are few “Wh embedded” questions and (even) fewer Wh *in situ* questions.^{11,12}

To summarize, French children produce more standard Wh fronted LD questions than Dutch children. Further, Wh *in situ* and PM, the less complex constructions according to the Derivational Complexity Metric, are not frequent in French. The high number of non-standard LD constructions in Dutch confirms the findings of Van Kampen (1997), who notes that most of the LD questions produced by two Dutch-speaking girls are Wh Copying questions. The French results are similar to those obtained in previous studies (cf. Strik 2003, 2007), but the overall number of expected responses is higher than in the previous studies. Note that both in Dutch and in French, the number of expected responses in the younger children is relatively low. This means that they avoid LD movement. These children rather produce root Wh-questions or adjunction and paratactic structures, involving fewer syntactic operations than LD Wh-questions (for more details concerning avoidance strategies, see Jakubowicz in press, Strik 2008).

4. Discussion

This section considers the contrasts that were observed between Dutch and French regarding the derivational complexity of the different types of LD questions.

Recall first of all that subject-verb inversion is obligatory in Dutch and that Dutch grammatical LD questions require more syntactic operations than French ones. Even if V-to-C movement is acquired early (cf. among others Meissel 1992), it still constitutes an extra operation. This could explain why the Dutch children are more tempted to use less complex constructions such as PM and Wh Copying questions than the French children.

We have also seen that PM and Wh Copying are grammatical options in (dialectal) adult Dutch (see Section 2). This is confirmed by the results of a questionnaire with 649 Dutch-speaking adults (see Strik 2008).¹³ These results show that PM and Wh Copying questions are indeed acceptable in standard Dutch, although less so than standard Wh fronted LD questions. Wh Copying questions are more felicitous than PM questions. I assume that the presence of PM and Wh Copying

in adult Dutch (contrary to what is traditionally assumed regarding Dutch, and contrary to French) contributes to the high frequency of these questions in Dutch children. They are not necessarily present in the input young children receive, but at least they are a grammatical option in the target language. Nonetheless, the Dutch adults of the task presented in the former section only produce a small number of PM and Wh Copying questions.

As to Wh *in situ* LD questions in French, I noted before that their status is not entirely clear (see note 4). Moreover, the number of root Wh *in situ* questions obtained with the same protocol is relatively low as well (cf. Strik 2008). Perhaps the elicitation technique, which made use of an indirect question, influenced the children and caused a high number of Wh fronted (root and LD) questions. For instance, Scheidnes & Tuller (2008), find a higher level of Wh *in situ* (root) questions in a task using no indirect question in the lead-in. Note also that Jakubowicz (in press) finds higher rates of Wh *in situ* (root) questions in SLI children participating in the same task as the one presented in this paper.

In the remainder of this section I will add some theoretical considerations to these points. As Jakubowicz (in press) suggests, the derivational simplicity of Wh *in situ* (LD) questions could be counterbalanced by higher processing costs in LF. I adopt this idea and propose to extend it to PM questions. In Wh *in situ* questions (see (7)), the Wh-word is not in the position where it is interpreted in LF, that is an initial position, in the left periphery of the clause. The Wh-feature in this position is checked by an Agree relation.

- (7) [_{CP} ~~uWh~~] Billy a dit [_{CP} *qu'* il entendait **quoi** Canard?]
 ↑ ↑ ↑
 Billy has said that he heard what Duck (Thibaut 25)

In PM questions, the Wh-word and the Wh-feature are not in the same position either. In PM questions without a scope-marker, the Wh-word in the embedded left periphery is interpreted in the matrix left periphery. As in Wh *in situ* questions, the matrix left periphery is phonologically empty (see (8a)). The matrix left periphery is not empty in PM questions with a scope-marker but, as its name suggests, a scope-marker is an expletive element, directly merged in this position, whose sole function is to assign matrix scope to the Wh-word in the embedded clause (see (8b)).¹⁴ So, PM questions also require an Agree relation in LF, in order to correctly interpret the embedded Wh-word in the matrix left periphery.

- (8) a. [_{CP} ~~tu~~^{Wh} Billy a dit [_{CP} quoi_i qu' il boit t_i Lapin?]]
 Billy has said what that he drinks Rabbit (Lila 4;3.23)

- [illegible]

a Wh-word or a verb. The data suggest that French children have more problems with verb movement than with movement of a Wh-word. However, this is probably due not only to complexity considerations, but also to the status of subject-verb inversion in colloquial French, where it is virtual nonexistent. If one simply counts the number of syntactic operations and compares the different types of LD questions, Wh Copying questions turn out to be less complex. Wh fronted, Wh *in situ* and PM questions appear to be equally complex. Their frequency is not equal, however. As we have seen, the Dutch children produce many Wh Copying and PM questions. The French children, on the other hand, produce (many) more Wh fronted questions than Wh Copying, PM and Wh *in situ* questions. An anonymous reviewer notes that Reconstruction in LF should be counted as an additional derivational step in Wh fronted LD questions. More research and more empirical evidence is necessary in order to determine the precise functioning of the Derivational Complexity Metric and its relation to LF and working memory, and to speech register.

5. Conclusion

As this paper has shown, the observation that Dutch children produce more PM and Wh Copying questions than Wh fronted LD questions can be (partly) explained by the Derivational Complexity Hypothesis. However, given this, the observation that French children produce few PM and Wh *in situ* questions is unexpected. For this reason, I have proposed that the derivational simplicity of these question types is counterbalanced by their higher processing costs in LF. Wh *in situ* and PM questions exhibit a discrepancy between the structural position of the Wh-word and the position in which it is interpreted; hence, they are less transparent in LF than are Wh fronted questions. Recall also that PM and Wh copying are grammatical options in adult Dutch, but not in adult French.

More generally, the derivation of syntactic structures involves the interaction of different syntactic operations, each having a certain cost. Such derivations are furthermore subject to other factors, such as the interpretation in LF and the speaker's working memory. The data presented in this paper support the conclusion that language acquisition involves a tension between derivational simplicity and interpretational ease. This tension can be formalized, at least in part, by a constraint on derivational complexity stating that "LF-transparent" derivations are less complex than "LF-opaque" ones.

Notes

* I am grateful to all subjects for their participation and to two anonymous reviewers and Lizette Pater for useful comments.

1. As the representation shows, I adopt a Direct Dependency analysis *à la* McDaniel (1989) for PM questions. According to this account, the overt Wh-word in the matrix left periphery is an expletive element, i.e. a scope-marker. The same holds for French.
2. As the representation shows, I assume that the Wh-word in the embedded left periphery is a pronounced copy of the Wh-word in the matrix left periphery. The same holds for French.
3. It has recently been shown that PM and Wh Copying occur in several Dutch dialects (cf. Barbiers et al. 2005). It is also attested, or at least accepted, in colloquial Dutch (cf. Strik 2008).
4. Judgments of Wh *in situ* LD questions vary; some linguists accept them, others do not. They are attested in French (cf. Strik 2003, 2008), but not nearly as often as their root counterparts.
5. This type of construction is attested in earlier acquisition studies on French LD questions (cf. Strik 2003, 2007, Oiry & Demirdache 2007, among others). Several types of PM and Wh Copying constructions have also been found in acquisition data of languages such as English (Thornton 1990), Dutch (Van Kampen 1997), Spanish and Basque (Gutierrez 2005).
6. In (2) the informal variant *où c'est que* has not been included.
7. This example exhibits clitic inversion. Stylistic and complex inversion of full DP subjects does not have the same status in French, but this point is not germane to the topic of this paper.
8. The task has been constructed in collaboration with Celia Jakubowicz, Catherine Rigaut and Marlies van der Velde. Thanks to Alec Marantz, Claire Beyssade, Paul Egré and Lea Nash for helpful comments.
9. Note that the investigator's lead-in already contains an indirect embedded question, without subject-verb inversion. For a motivation of the used elicitation technique and details of the testing procedure, see Strik (2008).
10. Wh Copying questions are in turn more frequent than PM questions. This is due in particular to the high number of object Wh Copying questions such as "Wat zei Billy wat Kikker eet?". Notice that it is unclear whether the matrix *wat* in these questions is a copy of the embedded *wat* or the scope-marker *wat* of the PM construction. I have counted these questions as Wh Copying questions, even though they are in fact ambiguous.
11. The results show some differences between the different test conditions. In French, Wh embedded questions occur most frequently with subject and locative Wh-words. The first type is more frequent in 6-year-old children; the second type in 4-year-old children. In Dutch, Wh embedded questions are also frequent with subject and locative Wh-words (the latter are more frequent than the former), but also with object Wh-words (see note 10). Wh embedded questions with cause Wh-words are infrequent in both French and Dutch. For details, see Strik (2008).
12. The results are rather homogeneous. However, the French Wh *in situ* and Wh embedded questions were produced by only some of the subjects, and are on the whole rather infrequent.

Almost all of the Dutch children who produced LD questions produced one or more Wh embedded question. For details concerning the data of individual subjects in each of the test conditions, see Strik (2008).

13. The questionnaire was developed at the Meertens Instituut, Amsterdam and involved the participation of several researchers, under the supervision of Sjeff Barbiers. It has been put online so as to reach a large number of informants.
14. Assuming a Direct Dependency analysis for Dutch and French PM questions, with an overt Wh element in the matrix left periphery (see Section 2).

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