A Case of True Optionality: *Wh*-insitu Patterns like Long Movement in French[1]

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1. Abstract

In this paper, I argue that the use of *wh*-in situ in long distance questions is felicitous in French. An elicited production study involving 32 French children and 18 adult control subjects shows that *wh*-in situ is productively used in embedded contexts, contrary to earlier claims. The study compares children's rates of partial movement (attested in child grammar and produced consistently in our studies) versus *wh*-in situ and long movement. Children clearly exhibit a preference depending on the truth value of the embedded clause: along with long movement, *wh*-in situ is produced in a context where the truth value of the embedded proposition is denied, where partial movement is strongly disfavored in that same context. Adult controls also produced *wh*-in situ in embedded contexts, conferring the same semantic status to long movement and *wh*-in situ. This leads to the conclusion that *wh*-in situ patterns like long movement in child and adult French.

2. Introduction

French questions are of particular interest because they admit such a large range of options. French allows *wh*-movement as well as *wh*-in situ to form interrogation. A long-standing debate in the literature centers on the status of *wh*-in situ. Is it semantically or pragmatically equivalent to *wh*-movement? Is it allowed in Long Distance questions? Our studies on Long Distance questions lead us to some answers.

In the studies we ran to assess French child preferences on Long Distance questions, one of the main results is the appearance of

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Partial Movement constructions—which are not allowed in the target grammar:

(1) a. *Tu penses que quoi a acheté Anne ?*
you think that what has bought Anne
"What do you think Anne bought?"

b. *Qu'est-ce que tu penses, l'assiette, où elle est cachée?*
what-is-it that you think the-plate where she is hidden
"Where do you think the plate is hidden?"

Partial Movement has been argued to represent a developmental stage in L1 acquisition on the basis of production data—an example for Child English is given in (2) below.

(2) What do you think which boy ate the cookies?
Thornton (1990)

Partial Movement has been attested in English L1 (Thornton 1990), Dutch (Kampen 1997, Strik 2009) and French (Oiry 2002, 2008, Strik 2003, 2009, Jakubowicz 2004, Oiry & Demirdache 2006, Demirdache & Oiry 2007, 2008). Previous papers (Oiry & Demirdache 2006, Demirdache & Oiry 2007, 2008) argue in favor of such a developmental stage based on elicited production data: French children consistently/sporadically produce Partial Movement questions although these constructions are ungrammatical in adult French. The appearance of such constructions sheds some light on the importance of the elicited experimental context. When looking at adult languages which allow Partial Movement questions, the literature reports that the felicity conditions suitable for the use of Partial Movement is different from the ones for long movement. That is, Partial Movement in German or Hindi implies the true presupposition of the embedded clause and that construction will not be felicitous in a context where the presupposition underlying CP2 is denied.

In order to clearly assess the role that the experimental design is playing, we submitted two opposite contexts suggesting either the existence or the non-existence of the object that the elicited question refers to (presuppositional *versus* non-presuppositional). In the presuppositional context, there is an individual/object satisfying the presupposition entailed by the elicited question (*there is something*

in the box in *"What do you think is in the box?"*)—we assume that this context is either suitable for the use of a Partial Movement or a Long-Distance question. In the non-presuppositional context, the presupposition underlying CP2 in the elicited question is clearly denied in context, there is no such individual/object that satisfies that presupposition—we expect then that Partial Movement will not be felicitous in such a context, but a Long Distance question will be. 32 children between 2.11 and 6.03 took the test and the results fit what we expected: the rate of Partial Movement questions fairly produced under the presuppositional context dropped dramatically in the non-presuppositional context. Interestingly, across the Long Distance questions class, we found Long Movement as well as the *wh*-in situ strategy; both are more produced in the non-presuppositional context. This result suggests the idea that *wh*-in situ is not only grammatical in an embedded proposition but is felicitous in a non-presuppositional context, a situation where the presupposition underlying CP2 in the elicited question has been cancelled—a finding never so clearly demonstrated before.

The first step I will take is to detail the strategies used in French grammar to form questions, and then I will focus on the controversial status of *wh*-in situ (section 3). In order to describe child question strategies, I need to discuss the syntax of Partial Movement constructions as they are represented across adult languages (Ancash Quechua, Bahasa Indonesia, German, Hindi, Kitharaka among others). I will outline the two competing analyses (direct *versus* indirect strategies) that have been proposed (section 4). In the following section, I show that both of the competing analyses described in section 4 can be adapted to the French child data (section 5). Interestingly, a subsequent review of the literature on adult languages shows that authors link presupposition with Partial Movement. Herburger (1994), Dayal (1994, 1996b and 2000) and Lahiri (2002) defend the idea that Partial Movement in German or Hindi implies the true presupposition of the embedded clause and that this construction will not be felicitous in a context where the presupposition underlying CP2 is denied. I will then emphasize the crucial fact that previous child experimental work by Thornton (1990) exploring the acquisition of Long Distance questions actually satisfied the felicity conditions of Partial Movement in adult languages, thus explaining the appearance of such constructions in the English child data (section 6). After illustrating the new protocol designed by Demirdache & Oiry (2007,

2008) in section 7, I will present the results of the experiment we ran with 32 children and 18 adults (the control group). I will show that child questions exhibit sensitivity to the experimental context, depending on whether the existential presupposition is satisfied or not, especially in the use of a Partial Movement construction *versus* Long Movement or *wh*-in situ questions. It will lead me to conclude that *wh*-in situ is not only felicitous but productive in Long Distance questions. It also does not imply any kind of presupposition, making it a perfect candidate to appear in a context where the presupposition has been cancelled—leading to the conclusion that *wh*-in situ in Long Distance questions and Long Movement pattern alike in their felicity conditions, and form two interchangeable options (sections 8 & 9).

3. French Grammar

As is well known, French allows both *wh*-movement (3) and *wh*-in situ (4) in matrix *wh*-questions.

(3) *Wh*-Movement
Qu'est-ce que tu fais?
what-is-it that you do
"What are you doing?"

(4) *Wh*-in situ
Q: Tu fais quoi? A: √ Rien
you do what nothing
"You're doing what?"

As Matthieu (2004) and Hamlaoui (2008) note, a possible answer to the *wh*-in situ question in (4) is "Rien/Nothing", *pace* Chang (1997). The view I am adopting confers the same status to (3) and (4), arguing that there is no semantic difference in presupposition requirements in order to use *wh*-in situ or *wh*-movement.

A controversy has arisen about the status of *wh*-in-situ in embedded clauses. On the one hand, Adli (2006a) reports that Bošković (1998) and Cheng & Rooryck (2000) argue for the impossibility of having *wh*-in situ in embedded clauses, either with *croire* 'believe' (5) or *penser* 'think' (6)—suggesting that *wh*-in situ is restricted to matrix clauses.

(5) **Jean et Pierre croient que Marie a vu qui?*
(according to Bošković 1998: 46)
Jean and Pierre believe that Marie has seen whom
"Who John and Peter believe Mary has seen?"

(6) **Marie pense que Jean a acheté quoi ?*
(according to Cheng & Rooryck 2000: 12)
Marie thinks that Jean has bought what
"What does Mary think that John bought?"

On the other hand, Adli (2004b, 2006a) reports the felicity of (7a,b) below, quoting Pollock (1998: 189) and Starke (2001: 51-53).[2]

(7) a. *Tu crois que Jean a acheté quel livre ?*
you believe that Jean has bought which book
"Which book do you believe John has bought?"

b. *Tu penses que Jean va épouser qui finalement ?*
you think that Jean will marry who in-the-end
"Who do you think John will marry in the end?"

Furthermore, Adli (2006a) reports judgments from French speakers for (7c,d) below: 4 out of 5 speakers judged these sentences as felicitous (see Adli 2006a for details).

c. *Tu crois qu'il arrive comment?*
(Adli 2006a:13, [6a])
you believe that-he arrives how
"How do you think he will arrive?"

d. *Tu crois que j'achète quoi?*
(Adli 2006a:13, [6b])
you believe that I-buy what
"What do you think I am buying?"

Interestingly, Adli (2006a: 13) notes about the four speakers accepting those sentences in (7c,d) that "they often used *wh*-in situ in embed-

[2] As a reviewer pointed out, D-linking also plays a role in the acceptability of *wh*-in situ. I am leaving that issue aside for now, because it doesn't seem relevant for our data—especially when looking at (7c,d) or (8 a,b,d) below.

ded sentences in colloquial language." The emphasis on judgments based on *français familier* is also maintained by Starke (2001: 52), who wonders why *wh*-in-situ in embedded *que*-sentences have been described by various authors as infelicitous although such constructions are not only grammatical but also represent the unmarked way to ask such questions (cf. also section 2.3 and 3.1 (iii)): "My best guess is that the more restrictive judgments correspond to 'classical' written French, as opposed to the spoken French."

Further evidence for the productivity of *wh*-in situ in embedded contexts comes from the children's production data obtained in the experiment presented in this paper. A few examples follow:

(8) a. *Tu penses que j'habite où ?*
you think that I-live where
"Where do you think I live?"

b. *Tu penses qu'il y a* ***quoi*** *dans la malle ?*
you think that-it there is what in the trunk
"What do you think is in the trunk?"

c. *Tu penses que* ***quelle fille*** *est cachée en dessous de cette boîte?*
you think that which girl is hidden in below of that box
"Which girl do you think is hidden in the box?"

d. *Tu penses que le policier fait* ***quoi*** *?*
you think that the policeman do what
"What do you think the policeman is doing?"

On the basis of the strong case made by Pollock (1998), Starke (2001) and Adli (2004b, 2006a) and on the appearance of such questions in child data, I conclude that *wh*-in situ is grammatical in embedded clauses in adult and child French.

Note: Along the same lines, Baunaz (2005) argue for the grammaticality of *wh*-in situ in embedded contexts. Furthermore, Baunaz and Patin (2011) show that prosody reveals that three types of *wh*-in situ coexist in French: two are presuppositional (partitive or specific) and one is non-presuppositional. It certainly would be very interesting to analyze theprosody of children *wh*-in situ questions.

4. Scope Marking in Adult Languages

In our experiments, we found a great number of Partial Movement constructions (henceforth PM) in child utterances. In order to analyze them properly, we must first consider the two competing analyses of PM for adult languages—they are illustrated below with the German example in (9).

(9) Partial Movement in German
[$_{CP1}$ *Was glaubt Georg* [$_{CP2}$ *wen Rosa geküsst hat?*
what believe G. who R. kissed has
"Who does George believe Rosa kissed?"

(10) Direct Dependency analysis
a. Spellout: *Was$_i$ glaubt Georg wen$_i$ Rosa geküsst hat ~~wen~~?*
b. LF: *Wen glaubt Georg ~~wen~~ Rosa geküsst hat ~~wen~~?*

(11) Indirect Dependency analysis
Spellout/LF:
[$_{CP1}$ *Was$_i$ glaubt Georg* [$_{CP2i}$ *wen$_j$ Rosa geküsst hat ~~wen~~$_j$?*

On McDaniel's (1989) classic analysis of PM, (9) contains only one argumental/referential *wh*-: the medial *wh*-phrase *wen*, which has undergone PM to the embedded Spec CP in the overt syntax. The matrix *wh- was* is an expletive scope marker base generated in the matrix Spec CP and forming a *wh*-chain with the medial *wh*-phrase whose scope it marks in the overt syntax, as shown in (10a). At LF, the expletive *wh-* undergoes expletive replacement, as shown in (10b). In sum, on a Direct Dependency analysis, PM in (9) has the syntax of Long Movement at LF.

In contrast, on the Indirect Dependency analysis in (11) proposed by Dayal (1994, 1996b and 2000) (see also Herburger 1994 or Lahiri 2002), (9) contains two argumental/referential *wh*-phrases: the medial *wen* and the matrix *was*. That is, *was* is not an expletive/non referential scope marker but the ordinary *wh*-phrase 'what', base-generated as the internal argument of the matrix verb *believe* and overtly fronted to Spec CP1. (9) thus contains two local *wh*-dependencies, each interpreted as a *wh*-question. CP1 is a question over propositions, CP2 a question over individuals. In Dayal's classic

analysis, CP2 is adjoined to the matrix at either the IP or CP level, and the connection between the two CPs is established indirectly by coindexing the matrix *was* and the subordinate *wh*-question, itself acting as a restriction on the matrix quantifier. *Was* thus has question scope over the set of propositions that George stands in the *believe* relation to, and CP2 restricts the possible answers to the matrix question to those and only those propositions that are possible answers to the subordinate question. The interpretive procedure thus creates the effect of LD extraction.

Consider now that Fanselow (2006) reported Simple Partial Movement (henceforth SPM) as an example of a construction with a partially moved *wh*-phrase in the embedded clause with no apparent scope marker in the matrix clause. He argues that SPM only occurs in languages that allow both Long Movement and *wh*-in situ strategies. A few languages across the world have been described as involving SPM, such as Ancash Quechua (Cole 1982b, Cole and Hermon 1994), Kitharaka (Muriungi 2004), Kikuyu (Clements 1984, Sabel 2000), Slave (Rice 1989; Basilico 1998), Bahasa Indonesia and other Malay languages (cf. Cole and Hermon 1998b), and Athabascan languages (Western Apache, Potter 1997; Babine-Witsuwit'en, Denham 2000). A few examples are given below in (12).

(12) a. Ancash Quechua (Cole & Hermon 1998b)
(Qam) kreinki ***imata*** *Maria munanqanta José rantinanta?*
(you) think what M. want J. buy
"What do you think Maria wants José to buy?"

b. Bahasa Indonesia (Saddy 1991)
Bill tahu ***siapa*** *yang Tom cintai?*
Bill knows who Foc Tom loves
"Who does Bill know that Tom loves?"

c. Kitharaka (Muriungi 2004)
U-ri-thugania ati ***n-uu*** *John a-*
2ndSG-Tense-think that Foc-who J.
ring- ir- e- t ?
Simple-past-beat Tense-Final-Vowel
"Who do you think that John beat?"

d. Kikuyu (Sabel 2000)
Ó-γw-eciìri-á Ngoγe a-úγ-íre ***nóo*** *ate o-on-íre Kaanakε?*
you-think N. said FP-who that saw Kanake
"Who do you think Ngoγe said that Kaanake saw?"

Until now, French has never been reported as a language allowing PM. But if we take a close look at the generalization described by Fanselow (2006: 441), "If a language tolerates SPM, it also tolerates *wh*-elements in situ and allows full *wh*-movement," it perfectly suits French questions and we can then analyze the embedded cleft attested in our adult and child data, given in (13) below, as involving SPM:[3]

(13) *Tu penses que c'est quoi qui est caché ?*
you think that it-is what that is hidden
"What do you think is hidden?"

Note that the construction in (13) implies a partially moved *wh*-phrase in the embedded clause with no apparent scope marker in the matrix clause, which is exactly what Fanselow (2006) describes as SPM.

5. Child French Partial Movement

Across all of our studies, we found examples of PM in child productions. We analyzed these along the competing theories that we have just presented: direct *versus* indirect dependency strategies.

5.1. Direct Dependency child data

(14) Child PM data requiring a Direct Dependency analysis
a. *Tu penses* ***où*** *elle est cachée, l'assiette ?*
you think where she is hidden the-plate
"Where do you think the plate is hidden?"

b. *Tu penses que* ***quoi*** *a acheté Anne ?*
you think that *what* has bought Anne
"What do you think Anne has bought?"

[3] A few occurrences of this type occurred in the adult and child data. This topic is developed in Guilliot & Oiry (2011) and Oiry (in prep).

c. Tu penses **quoi** qu'il mange, le policier?
you think what that-he eats the policeman?"
"What do you think the policeman is eating?"

d. *Tu penses **qu'est-ce qu**'elle va manger, Anne?*
you think what-is-it that-she will eat Anne
"What do you think Anne will eat?"

e. *Tu penses **qui** qui me lit des histoires?*
you think who that me read the-def stories
"Who do you think is reading me stories?"

f. *Penses **comment** les amis, i(l) rentrent chez eux?*
think how the friends, they go-home at them
"How do you think our friends go home?"

The sentences in (14) are analyzed on a par with PM in German under McDaniel's (1989) analysis; a partially moved *wh-* phrase is licensed by a non-referential/expletive scope marker morpheme merged in an operator position in the matrix CP. Oiry & Demirdache (2006) and Demirdache & Oiry (2007, 2008) don't opt for either analysis on the status of the scope marker as an empty operator (Ø) or an intonational morpheme (Q). The Direct Dependency term issued from the fact that McDaniel analyzes the relationship between CP1 and CP2 as direct, namely that the two propositions are subordinated to each other.

The analysis attributed to the examples in (14) is given in (15) below,

(15) French L1: Q_i / $Ø_i$
Tu penses quoi$_i$ qu'il mange, le policier?
What do you think the policeman is eating?

Thornton (1990) found non-adult questions in English child data and analyzed them as involving PM, as illustrated in (16). Under Thornton's analysis, (16) involves a Direct Dependency strategy: *what* is an expletive scope marker signaling the matrix scope of the medial *wh-*, on a par with McDaniel's Direct Dependency analysis of PM in German given above in (10).

(16) L1 English (Thornton 1990: 246)
What do you think which boy ate the cookies?
Who do you think who Grover wants to hug?

Notice that there is a difference between the French data in (15) and the English data in (16). French L1 allows the absence of a lexical scope marker—this fact can be easily explained if we consider again Adult French syntax as in (1b) repeated below, which exhibits *wh*-in situ with no apparent scope marker in CP1 to legitimize the *wh*-word.

(1) b. Q_i: *Tu fais* ***quoi***$_i$ *?* (You're doing what?)

The question in (15) then (repeated below in (17)), could be reanalyzed as an instance of SPM with a partial ellipsis of the unaccented words of the adult cleft construction. Children would be deleting everything but the focalized element *quoi*. This analysis has several advantages: children are producing an existing construction of the adult grammar, with only a few differences. It also disambiguates the position of the *wh*-word in the sentence by showing clearly that *quoi* 'what' is part of the embedded proposition and not an argument of the main verb *penser* 'think'.

(17) Embedded Cleft constructions
a. Child French: *Tu penses ~~que c'est~~ quoi*$_i$ *qu'il mange, le policier?*
b. Adult French: *Tu penses que c'est quoi qui est caché?*
"What do you think the policeman is eating / is hidden?"

5.2. Indirect Dependency child data

Examples of the second type of French child data are given in (18).

(18) French SM data requiring an Indirect Dependency analysis.
a. **Qu'est-ce que** tu penses, l'assiette, **où** elle est cachée?
what-is-it that you think the-plate where she is hidden
"Where do you think the plate is hidden?"

b. ***Qu'est ce que*** *tu penses que # elle mange* ***quoi****, Anne?*
what-is-it that you think that she eat what Anne
"What do you think she eats, Anne?"

c. ***Qu'est-ce que*** *tu penses* ***où*** *il est caché, le p'tit lapin?*
what-is-it that you think where he is hidden the small rabbit
"Where do you think he is hidden, the small rabbit?"

d. ***Qu'est-ce que*** *tu penses* ***ce*** *qui /****qu'est-ce qui*** *est*
*w*hat-is-it that you think what that/what-is-it that is
caché dans la malle?
hidden in the trunk
"What do you think is hidden in the trunk?"

e. ***Qu'est-ce que*** *tu penses que* ***laquelle voiture****,*
*w*hat-is-it that you think that which car,
soit la petite soit la grande, qui est cachée?
either the small or the big that is hidden
"Which car do you think is hidden, the small one or the big one?"

f. *Tu crois* ***quoi*** *que Lala elle aime bien* ***quoi****?*
you think what that Lala she like well what
"What do you believe that Lala likes?"

The sentences in (18) can be analyzed on a par with Scope Marking (henceforth SM)[4] in Hindi (Dayal 1994, 2000 or Lahiri 2002) or in German on Herburger's (1994) analysis; they involve two clauses, each containing a contentful *wh-* and interpreted as a *wh*-question, and adjoined to one another. The matrix *wh-* is not an expletive/non referential scope marker, but the ordinary *wh*-phrase used to quantify over propositions (*quoi*/*qu'est-ce que* 'what'), base-generated as the internal argument of the matrix verb *think*. These Long Distance questions (henceforth LD) thus contain two local *wh*-dependencies. CP1 is a question over propositions, CP2 a question over individuals. Syntactically, CP2 is adjoined to the matrix clause, either at the CP or the IP level, according Dayal's analysis. Semantically, CP2 restricts the possible answers to the matrix *wh*-question to those and

[4] PM and SM could be used to describe the same phenomenon, depending on which analysis you choose. PM is used by McDaniel, and SM by Dayal—we will be using mostly SM from now on.

only those propositions that are possible answers to the subordinate question.

(18') French L1
[$_{CP1}$ ***Qu'est-ce*** ***que***$_i$ *tu* *penses* [$_{CP2i}$ *l'assiette,* ***où***$_j$
what-is-it that you think the-plate where
elle est cachée t_j*?*
she is hidden
"Where do you think the plate is hidden?"

In example (18') above, CP2 is adjoined to CP1. CP2 is coindexed with the matrix *wh- qu'est-ce que* 'what', as it restricts the possible answers to CP1 "what do you think" to the propositions that are possible answers to CP2 "where the plate is hidden," creating the effect of LD extraction.

6. Long Movement, *Wh*-In Situ and Partial Movement (PM): Presuppositional Differences

Long Movement and PM are not semantically equivalent in adult languages, according to Herburger (1994), Dayal (1994, 1996b, 2000) and Lahiri (2002).

> "In (1a) [= (19a)], the proposition expressed by the [embedded] *wh*-clause, i.e., that Rosa kissed someone, cannot be understood as being merely part of George's belief-state. Rather, it must be understood as being part of the speaker's beliefs, that is, *de re*. In contrast, in (1b) [= (19b)] it is possible to interpret the proposition that Rosa kissed someone *de re*. But it is equally possible to interpret it as a mere figment of George's imagination, that is, *de dicto*." Herburger (1994: 2)

(19) a. Scope Marking (German and Hindi)
Was glaubt Georg wen Rosa geküsst hat?
What believe George who Rosa kissed has
"Rosa kissed someone, who does George think it was?"

b. Long Movement (German) or Scrambling (Hindi)
Wen glaubt Georg dass Rosa geküsst hat?
"Who does George believe that Rosa kissed?"

In sum, in (19a) the knowledge that Rosa kissed someone is shared by both speakers. The subordinate "Rosa kissed someone" has to be understood *de re*. On the other hand, in (19b) either Rosa kissed someone or it has happened in Georg's imagination. The subordinate has to be understood *de dicto*.

The Indirect Dependency analysis correctly predicts that a SM question will not be felicitous in a context where the presupposition behind the embedded *wh*-clause is denied. (19a) would thus be infelicitous if the context made it clear to the speaker that George's belief about Rosa was false.

Notice now that LD *wh*-in-situ in French patterns with full movement. Thus, (20b), with the appropriate intonation and stress on *qui*/*who*, is felicitous in the context provided in (20a) which makes it clear that the existential presupposition behind CP2 (that someone will help us clean up) cannot be satisfied.

(20) LD *wh*-in situ in French (Example adapted from Dayal 1994)
a. Toi et moi, on sait qu'il n'y a personne pour nous aider à nettoyer, mais Marie apparement ne le sait pas.
'Both you and I know that there is no one to help us clean up, but Mary apparently doesn't.'

b. Et alors, Marie, elle pense que qui va nous aider à nettoyer?
'And so, Mary, she thinks that who will help us clean up?'

Crucially, Thornton's experimental design (1990) satisfies the felicity conditions of SM in Adult Grammar (German, Hindi); there is always a true answer to the subordinate clause in the experimental context.

(21) Thornton (1990)
a. Target LD:
What do you (Ratty) think is hidden in the box?
b. Presupposition underlying CP2:
there is something hidden in the box

c. The guessing game
Ratty has his eyes covered while the experimenter and the child hide a series of items in various places. Ratty then uncovers his eyes.

Experimenter: We know where all the things are hidden. *We know that there is a marble in the box, a bear under the blanket and we know that Grover is under the yogurt carton*. Let's see if Ratty can guess where we hid them. Let's do the box first, OK? *We know there is a marble hidden in the box, but ask the rat what he thinks*.

The appearance/production of SM structures in English child data is not surprising any longer once we realize that the felicity conditions of SM are completely satisfied under Thornton's experimental context.

7. New Design

In the new design, we provide two opposite contexts (Demirdache & Oiry 2007): one similar to the Thornton's context called presuppositional—which satisfies the felicity conditions of SM, and a non-presuppositional context that is felicitous for the use of Long Movement but not for a SM structure.

We first ran pilot studies reported in Demirdache & Oiry (2007, 2008). The full study is reported here for the first time and involves 32 children between 2.11 and 6.03. Adult controls (18 undergraduates from Nantes University) were asked to write their answers as they would *say* them. The study incorporates two sessions of similar length, the first session elicited LD under a presuppositional context (15 elicited LD), and the second session elicited LD under a non-presuppositional context (4 elicited LD). In the course of the second session, we revert back to a presuppositional context (1 elicited LD). The following is an example of what the experimental context looked like.

(22) Translation of the non-presuppositional context
Peter is alone in the kitchen.

Peter: I'm happy today. It's my birthday. I'm sure Mommy bought me a gift. I can't wait for her to get home. I think I know what she bought me. I'll wait for Mommy in the garden.

Peter leaves the kitchen.
Mother arrives with a big bag that she puts down on the floor. She opens it.
Mother: Oops, it's Peter's birthday! It's 8! It's too late. The stores are closed. I got back from work too late. I didn't have time to buy his birthday gift!
Peter's mother closes her bag.

Experimenter (*in a low voice that Peter can't hear*): You and I, we both know that the bag is empty and that Mommy didn't buy anything. But Peter doesn't know that. He is so sure Mommy bought him something. Maybe he thinks she bought him a plane or maybe he thinks she bought him the Harry Potter book. Ask him.

Target: … see (23).
Mother: I didn't buy you anything my little one, I am so sorry, I didn't have time today, and the stores were closed. Tomorrow, I promise I will buy you a gift.

(23) *Target LD*
a. Long Movement: "Qu'est-ce que tu penses que ta Maman t'a acheté?"
b. Embedded In Situ: "Tu penses que ta maman t'as acheté quoi?"
"What do you think your Mom bought you?"

In the course of the second session, we revert back to the presuppositional context:

(24) Translation of the presuppositional context
The next day, Mommy buys Peter his birthday present. She arrives in the kitchen with the gift in her bag. Peter is there doing his homework.

Mother: My little Peter, with one day late, here is your birthday gift.

Experimenter (in a low voice): Peter knows that there is a gift for him in Mommy's bag. Let's see what he thinks she bought him. Maybe he thinks it's a plane or perhaps a train. Ask him.

(25) *Target LD*
a. *Long Movement*: "Qu'est-ce que tu penses que ta Maman t'a acheté?"
b. *Embedded In Situ:* "Tu penses que ta maman t'as acheté quoi ? "
"What do you think your Mom bought you?"

Note that both Long Movement and LD *wh*-in situ are expected as target questions in (23) and (25). Regarding the respective proportion of each construction, we expected more Long Movement than *wh*-in situ based on the results of previous studies in which *wh*-in situ in embedded questions represented only a small percentage of the results.[5] We also predict that SM would be expected to appear in a presuppositional context as its felicity conditions are satisfied in this context precisely, but not in a non-presuppositional context; according to the Indirect Dependency analysis, the non-presuppositional context is not suitable for the use of a SM question.

8. Results

The following are the results from our 32 French Speaking children between 2.11 and 6.03 and 18 adult controls. We distinguished three different groups of children. The first group produces LD (LD *wh*-in situ or Long Movement) in both contexts: their production is very similar to adult production in the sense of what we expected. This group is composed of ten of the oldest children, between 5 and 6 years of age (mean age: 5.07). The second group produces mainly SM questions and only a few LD. This group is composed of ten children (mean age: 5.00). The third group 3 fails to produce any

[5] We got only a few LD *wh*-in situ in the pilot studies (less than 10 every time), but we had a fair number of them in the present study (23 questions). The explanation could be attributed to the few numbers of elicited items in the previous studies.

kind of LD and is composed of 13 of the youngest children (mean age: 4.05).

The results produced by the first group of children is most relevant to the goal of this paper, and I will focus on them from now on. The two other groups have not acquired LD, that is, they have not mastered their syntax and/or their semantics.[6] If we compare them with the second group, the main strategy they used to establish LD dependencies is local movement (partial movement, indirect questions). They haven't mastered the semantics of LD because they only produce a few LD in the presuppositional context and don't produce any LD questions in the non-presuppositional context (and fail to produce any questions 79% of the time during that session). This group has acquired the syntax of LD, because they were able to produce a few during the first session. What leads us to conclude that they haven't mastered their semantics is the fact that they seem unable to produce any in the second session where their felicity conditions are optimally satisfied.[7] The general pattern of production in the third group is characteristic of children who haven't yet mastered the syntax or the semantics of LD: they don't establish any LD dependencies. They only produce matrix questions, propose an answer when a question is expected, or don't answer at all. Remember that this group includes the youngest children of the study, so this result is not surprising. Overall, the first group is the only one that chooses LD as the primary strategy to establish LD dependencies. I will detail their production in 6.1 below. Interestingly, if we pay attention to the mean age of each group, they scale between 4.05 (group 3) and 5.07 (group 1), and the group 2 mean is in-between at 5.00. The differences are not large enough to draw a strong conclusion, but correspond to what we would expect regarding the order of acquisition of questions:

matrix → partial movement → Long Distance.

8.1. Group 1

This group produces LD in both contexts. In the presuppositional context, children produce 31.75% LD questions whereas in the non-

[6] See Oiry (2011) for a complete discussion of the results.

[7] Remember that in session 1, either a root question, a PM question or a LD is equally expected in the child grammar.

presuppositional context they produce 64%. The production between those two contexts appeared to be significantly different: children of this group choose more often the LD strategy in the second session, which we expected, because this context is more suitable for the use of a LD.[8]

Table 1 below details the percentage of each strategy, Long Movement and LD *wh*-in situ (sometimes abbreviated IS): the latter is clearly less frequent than the former. Interestingly, only children who produce Long Movement produce also *wh*-in situ and not the contrary, showing clearly that they need to master Long Movement strategy in order to acquire the LD *wh*-in situ strategy. Once again, the production of Long Movement and LD *wh*-in situ is significantly higher in the second session. This leads to the conclusion that those two strategies patterns alike.

Table 1: LD strategies in both contexts

Group 1	Presuppositional context	Non-presuppositional context
LD *wh*-in situ	12.75%	18%
LD *extraction*	19%	46%
Total LD	31.75%	64%

(26) Examples of Long Movement (across both contexts)[9]

a. ***Qui*** *tu penses qui vient te chercher ?*
who you think that come you get
"Who do you think is coming to get you?"

b. ***Qu'est-ce que*** *tu penses qu'il y a dans la malle ?*
what-is that you think that-it there is in the trunk
"What do you think is in the trunk?"

[8] The use of a matrix question including the verb of the targeted embedded clause (*Qui est-ce qui a sauté ?* / "who jumped?" in place of the LD counterpart *Qui penses-tu qui a sauté ?*/"Who do you think jumped?") is only acceptable in the presuppositional context. In the non-presuppositional context, such a question is unexpected, regarding the truth value of the presupposition underlying it, namely that nobody jumped.

[9] See (8) above for examples of *wh*-in situ.

c. ***Qu'est-ce que*** *tu penses qu'Anne a acheté ?*
what-is that you think that-A. has bought
"What do you think Ann bought?"

d. ***Qu'est-ce que*** *tu penses que le pirate a caché ?*
what-is that you think that the pirate has hidden
"What do you think the pirate hid?"

Between the two LD strategies, LD Movement is the preferred strategy by this group. We can make a couple of comments about this result. One factor might find its origin in the syntax of *wh*-in situ: only children who master Long Movement start using LD *wh*-in situ. This emplies that LD *wh*-in situ is not an easy construction to acquire, certainly because it might require LF movement in order to be interpreted. Another factor could be that *wh*-in situ is considered very informal and French children are encouraged not to use it. In a context where adults are interviewing them, they might not feel free to produce it.

Notice now that if we look at the ratio of SM questions presented in table 2 below, the pattern of responses in that group looks exactly as we expected. The production of SM significantly decreases between the two contexts, because the use of a SM is not felicitous in the non-presuppositional context.

Table 2: SM in both contexts

Group 1	Presuppositional context	Non-presuppositional context
Scope Marking	18%* 23 items	7%*[10] 3 items

If we now compare the two strategies LD *wh*-in situ and SM in the opposite experimental contexts presented in table 3 below, we clearly see that the proportion is conversely significantly different: while the LD *wh*-in situ ratio increases, the SM ratio decreases in the non-presuppositional context (compared with the presuppositional context), showing that *wh*-in situ and SM do not share the same felicity conditions in French L1. If LD *wh*-in situ was not felicitous in a non-presuppositional context, we would expect a decrease in

[10] * indicates a significant difference, $p<0.05$.

his production rate, as it is the case for SM. These results lead to the conclusion that the felicity conditions for LD *wh*-in situ are crucially different from SM questions. Long Movement and LD *wh*-in situ rates increased between the two contexts, meaning they behave alike in child grammar. To be precise, these results show that LD *wh*-in situ is felicitous in a context where the presupposition has been cancelled, contrary to what has generally been assumed in the literature.

Table 3: SM *versus* LD *wh*-in situ

Group 1	Presuppositional context	Non-presuppositional context
Scope Marking	**18%**	**7%**
LD *wh*-in situ	**12.75%**	**18%*** 9 items

8.2. Adult control versus group 1

Finally, it is interesting to look at the results of the adult control group presented in table 4 below, and to compare them with the results of the first group of children.

There are several aspects of the data in table 4 worth noting. Adults generally tend to avoid long movement: although they produce a few LD, their most frequent strategy corresponds to Root 2 questions, which they produced 35.25% of the time (*Qui est-ce qui a sauté ?*/ "who jumped?"). LD strategies (Long Movement and LD *wh*-in situ combined) appear next (26.25%). This is quite unexpected and surprising, especially with regard to child productions. Adults use another means of avoiding Long Movement, as their third strategy (23.5%) includes a typical French expression *à ton avis* ("according to you") followed by a root question with the verb of the embedded LD target (see 27 below for examples).

Table 4: adult *versus* group 1 production in the presuppositional context

Presuppositional context	Adult controls	Group 1
Root 2 (with verb of the embedded LD target)	**35.25%**	9%
LD (Long Movement and LD *wh*-IS)	**26.25%**	**31.75%**
Avoid (*A ton avis?*/"According to you?" "shunning" questions	**23.5%**	**2%**
SM (Indirect Dependency)	1% (SQ[11])	**27.5%**
Root 1 (with the verb of the matrix LD target)	2%	12.75%
Other (indirect questions, Direct Dependency)	12%	17%

The children in group 1 chose indeed LD as their primary strategy (31.75%), and SM turns out to be the second most frequently produced strategy (27.5%). These facts are interesting because they simply show us that these children master both strategies (syntactically and semantically) and use them freely. We already discussed with respect to table 2 above that these children almost completely stop using the SM strategy in the non-presuppositional context, which supports the idea that they know the felicity conditions for SM and use that strategy accordingly.

(27) Examples of "shunning" questions
a. A ton avis, qu'est-ce que ta mère a acheté pour ton anniversaire, Pierre ?
What did your mom buy for your birthday, according to you Peter?
b. Qu'est-ce qu'il y a à l'intérieur de la malle, à ton avis ?
What is in the trunk, according to you?

[11] SQ stands for Sequential Question as in: *Qu'est-ce que t'en penses? Qu'est ce qu'il y a dans l'arrosoir?* ("What do you think? What's in the watering can?").

Table 5 below details the results for both adults and children of group 1 in the non-presuppositional context. One striking fact is that these French adults use significantly fewer LD than children do (49% versus 64%, a significant difference), even if LD is their primary strategy to establish LD dependencies, contrary to how they performed in the previous context. A second observation about table 5 reveals that adults still tend to avoid Long Movement as in the presuppositional context: the "shunning" strategy "à ton avis" is still very productive (29%) (see 27 above). This strong result is actually unexpected in the non-presuppositional context. We can try to explain it by arguing that adults might be adopting their addressee's point of view (Seth Cable p.c.),[12] because their addressee does not share the knowledge that there is nothing that his mum bought or that there is nothing in the trunk.

Table 5: adult *versus* group 1 production in the non-presuppositional context

Non-presuppositional context	Adult controls	Group 1
LD (Long Movement and LD *wh*-IS)	**49%***	**64%***[13]
Avoid (*À ton avis?*/ "According to you?")	**29%**	**6%**
Presupposition Q	7%	4%
Others	8%	14%

In table 6 below, we detail the ratio of each LD strategy for both adult and child groups. We already have shown that adults produce generally fewer LD questions compared to group 1 but it is noticeable that adults tend also to produce **fewer LD *wh*-in situ** than children in **both contexts**.

[12] The same argument could actually be used to explain why a few SM are still produced by the children of group 1 in this context.

[13] Indicates a significant difference, $p<0.05$.

Table 6: adults' *versus* children's productions of LD questions

	Adult controls	Group 1
Presupositional	**26.25%**	**31.75%**
Long Movement	21.5%	19%
LD *wh*-in situ	**4.75%**	**12.75%**
Non-presuppositional	**49%**	**64%**
Long Movement	40.5%	46%
LD *wh*-in situ	**8.5%**	**18%**

We have already shown that LD *wh*-in situ is only produced by children who actively produce Long Movement. This leads to the conclusion that LD *wh*-in situ is not more economical than Long Movement, nor does it represent an easier strategy. But how can we then explain the discrepancy between adults' and children's production of *wh*-in situ? Can the adult production pattern be explained by the *social (un)desirability* of *wh*-in-situ (Adli 2006a)? According to Adli, quoting Starke (2001), *wh*-in situ could be (consciously) associated with a colloquial register by French speakers, which would not allow them to use it in an experimental situation where they would feel judged. On the other hand, children might not yet have that social filter on their grammar and use *wh*-in situ more freely than adults.

9. Conclusions

The results regarding *wh*-in situ emerged from an experimental study designed to better understand Partial Movement in child French. The novel findings on Partial Movement presented here show that its appearance is attributable to the experimental context. The original design (Thornton 1990) always entailed the truth value of the presupposition under CP2, and was thus suitable to the use of Partial Movement. Our extension, first presented in Demirdache & Oiry (2007), uses two contexts, one suitable for the use of Partial Movement, and another which isn't appropriate for the use of Partial Movement. The results show that child grammar exhibits the

same constraints as adult languages that allow Partial Movement constructions as German or Hindi do. That is, the Partial movement rate dropped in the context where the presupposition under CP2 has been cancelled, showing that these children know the felicity conditions of Partial Movement.

Turning to *wh*-in situ in Long Distance questions, I have shown that both children and adults produce *wh*-in situ freely in embedded contexts. This appears to settle the question of whether *wh*-in situ is grammatical in such contexts. Furthermore, as the Long Distance question rate increased in the non-presuppositional context, so did *wh*-in situ, showing that it is clearly felicitous in a context where the presupposition has been cancelled—making it pattern perfectly with Long Movement in both child and adult French grammar.

A question for further research involves the low rate of production of Long Distance questions in the adult results, both Long Movement and LD *wh*-in situ—calling into question the productivity of the Long Distance strategy in French grammar. These data are maybe not surprising, as Stepanov (2001) has shown that extraction from a subordinate finite clause is actually not allowed in many adult languages and that they use instead alternative strategies such as Partial Movement. Interestingly, I also found that Simple Partial Movement is a strategy attested in Adult French, a result that will require a separate paper to properly address.

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