ON THE SYNTAX AND SEMANTICS OF LONG-DISTANCE QUESTIONS IN CHILD FRENCH

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1. Introduction

Partial-Movement has been argued to represent a developmental stage in L1 acquisition of Long-Distance (LD) questions on the basis of production data in English (Thornton (1990), Crain and Thornton (1998)), Dutch (van Kampen (1997); Strik (this volume)) and French (Demirdache and Oiry (2007); Jakubowicz (2004); Oiry (2002), (2005); Oiry and Demirdache (2006); Strik (2003)), as well as comprehension data (Roeppe and de Villiers (1994); McDaniel, Chiu and Maxfield (1995)).

There are two competing analyses of Partial-Movement in adult grammars: the Indirect Dependency analysis (Dayal (1994); Herberger (1994); Lahiri (2002)) and the Direct Dependency analysis (Beck and Berman (2000); McDaniel (1989)). On the basis of elicited production data, we first argue that both these scope-marking strategies are attested in L1 French.

We then provide novel syntactic and semantic arguments for the Indirect Dependency (ID) strategy. The first argument is that the ID analysis explains the overt syntax of exceptional LD yes-no and alternative questions in L1 French. The second argument is based on the results of an elicited production task designed to induce LD-questions in different experimental contexts. We show that some children are unable to produce questions in discourse contexts that, crucially, satisfy the felicity conditions of LD-questions (full movement or wh-in-situ) but not those of scope-marking on the ID analysis. We conclude that children go through a developmental stage where they appear to have the semantics, the felicity conditions of scope-marking questions on the ID analysis, but not yet those of either LD wh-movement or LD wh-in-situ. We take this conclusion to provide strong evidence for an ID strategy in L1 acquisition.

2. Wh-Scope Marking Strategies in Adult Grammars

The two competing analyses of Partial-Movement (PM) are illustrated below with the German example in (1). On McDaniel's (1989) classic analysis of PM, (1) 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 (SM), 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 (2a). At LF, the expletive WH undergoes expletive replacement, as shown in (2b). In sum, on a DD analysis, partial-movement in (1) has the syntax of long-movement at LF.

(1) Partial Movement in German

\[ _{CP_1} \text{Was} \quad \text{glaubt} \quad \text{der} \quad \text{Georg} \quad _{CP_2} \text{wen} \quad \text{die} \quad \text{Rosa} \quad \text{geküßt} \quad \text{hat}\]

‘Who does George believe Rosa kissed?’

(2) Direct Dependency analysis
a. Spellout: \[ _{CP_1} Q_i / \text{Was} \quad [ \text{believe} \quad \text{George} \quad _{CP_2} \text{who} \quad [ \text{Rosa} \quad \text{has} \quad \text{kissed} \quad \text{who} ]] ]

b. LF: \[ _{CP_1} \text{who} \quad [ \text{believe} \quad \text{George} \quad _{CP_2} \text{who} \quad [ \text{Rosa} \quad \text{has} \quad \text{kissed} \quad \text{who} ]] ]

(3) Indirect Dependency analysis

Spellout/LF: \[ _{CP_1} \text{what} \quad [ \text{believe} \quad \text{George} \quad \text{what} ] \quad _{CP_2} \text{who} \quad [ \text{Rosa} \quad \text{has} \quad \text{kissed} \quad \text{who} ] ]

In contrast, on the ID analysis in (3), (1) contains two argumental/referential wh-phrases: the medial wen and the matrix was. That is, was is not an expletive/non referential SM but the ordinary wh-phrase ‘what’, base-generated as the internal argument of the matrix verb believe and overtly fronted to Spec CP1. (1) thus contains two local wh-dependencies, each interpreted as a wh-question. CP1 is a question over propositions, CP2 a question over individuals. On 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 coinciding the matrix was and the subordinate wh-question, itself acting as a restriction on the matrix quantifier. was thus questions 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.

On the basis of an elicited production task, Thornton (1990) concludes that English children produce PM questions, as illustrated in (4). Crucially, on Thornton's analysis, (4) involves a DD strategy: what is an expletive SM signaling the matrix scope of the medial WH, on a par with McDaniel's DD analysis of PM in German given in (2).
2. The syntax of wh-scope marking in child French

We now provide evidence form the overt syntax of exceptional LD questions in L1 French for alternative wh-scope marking strategies—that is, for both a Direct Dependency and an Indirect Dependency strategy in L1 French acquisition. The findings reported here are based on elicited production tasks carried out with three different groups of monolingual French children: (i) twenty 3;02 to 5;11 year old children; (ii) eleven 3;08 to 5;09 year old children; and (iii) thirty three 2;11 to 6;03 year old children.

Consider first the syntax of the exceptional LD questions illustrated in (5), which all contain a single contentful wh-phrase partially fronted either to the specifier of the embedded CP (5a-e), or to the left-periphery of the embedded IP (5f-i). Note that (5) involves clausal piedpiping of the subordinate clause, itself containing a medial wh-phrase.

(5) Direct Dependency scope-marking in L1 French

a. Tu penses quoi qu'il mange, le policier? ‘You think what he eats, the policeman?’

b. Tu penses qui qui me lit des histoires? ‘You think who that reads me stories?’

c. Tu penses où elle est cachée, l’assiette? ‘You think where she is hidden, the plate?’

d. Penses comment les amis, i rentrent chez eux? ‘Think how the friends, they go home?’

e. Tu penses qu’est-ce qu’elle va manger, Anne? ‘You think what is-it that she will eat, Anne?’

f. Tu penses que qu’est-ce qui est caché? ‘You think what is-it that is hidden?’

g. Tu penses que comment je rentre ? ‘You think that how I go home?’

h. Tu penses que quoi a acheté Anne ? ‘You think that what bought Anne?’

i. Tu penses que c’est lequel chat qui est caché? ‘You think that it is the-which cat that is hidden?’

j. Qui qui va tinviter, tu penses? ‘Who that will invite you, you think?’

There is, however, no overt SM in (5) licensing the medial wh-phrase. We posit a zero Q-morpheme base-generated in the matrix C(P) and licensing the medial WH, as illustrated in (6a). Assuming this Q morpheme is replaced at LF by the medial WH as in (6b), then the syntax of the exceptional questions in (5) involve a DD scope-marking strategy, on a par with McDaniels’ DD analysis of German partial-movement in (2).

(6) Spellout: [c₁ Q°₁ [ tu penses where₁ [ she is hidden where, the plate ]]]

(7) Bare yes-no questions: [c₁ Q°₁ [ tu vas où₁ ] ]

Following Oiry (2002, 2005), we assume that the silent Q-morpheme in (6) licensing PM in the child grammar is also the Q morpheme licensing wh-in-situ (7a), and bare yes-no intonational questions (that is, without raising of F° to C°, (7b)), in the adult grammar. Evidence for this claim is provided by the syntax of the exceptional LD questions in (8), where an overt SM appears in the matrix, namely ESK. There are two SMs in adult French: ESK restricted to yes-no questions and the silent question operator licensing bare yes-no questions as well as wh-in-situ. We conclude that children use both of the SMs available in the adult French grammar to license PM in LD questions.

(8) ESK tu penses où elle est cachée, l’assiette?

We correlate the syntax of the DD strategy in L1 French with the parameter settings for wh-movement in the adult grammar. PM without an overt SM is cross-linguistically attested but, according to Fanselow (2007), only in languages where both (full) wh-movement and wh-in-situ coexist (e.g. Malay or Athabaskan languages), as is the case in adult French. Further support for this generalization is provided by bilingual and L2 acquisition data. Yip and Matthews (2007) report that PM questions without an overt SM are spontaneously produced by Cantonese-dominant bilingual children exposed to Cantonese and English from birth (8), as well as by Chinese Pidgin English speakers (9).

(9) O You think what nut I am getting now? [picking nut out of mixed tin] (Timmy 4;01;29)

O You think where is Sophie? [hiding under table] (Sophie 5;03;02)

(10) O You think what time ship can come [i.e. when do you expect the ship’s arrival]
English yes-no questions, is used in (11) to signal matrix scope of the medial WH, just as in (8), where the SM ESK, characteristic of French yes-no questions, is used to signal matrix scope of the medial WH.

(11) **Do you think what is in the bag?**

French kids, Cantonese/English bilingual kids, Japanese L2 learners of English, or Chinese Pilid English speakers, have two parameter settings for wh-movement in their target/input grammar(s): Don't move! Move! The syntax of DD in L1 French (no overt SM) thus correlates with the wh-movement parameter settings in the target grammar.

Recall that the debate as to whether PM in German involves a DD or an ID hinges on the status of was: is was an expletive wh-phrase acting as a SM (DD), or the ordinary wh-phrase 'what' quantifying over propositions and base-generated as the object of the matrix verb (ID)? There is no issue in either (5) or (8) as to the status of the SM since it is not a wh-phrase. We conclude that (5) and (8) provide strong evidence for a DD analysis of PM in L1 French.

Consider now the syntax of the exceptional LD questions in (11), each containing two contentful wh-phrases.

(12) **Indirect Dependency scope-marking in L1French**

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?'

b. *Qu'est-ce que tu penses où il est caché, le petit lapin?*
   - 'What-is-it that you think where he is hidden, the small rabbit?'

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

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

e. *Qu'est-ce que tu penses c'est lequel chat qui est caché?*
   - 'What-is-it that you think it is which cat that is hidden?'

f. *Qu'est-ce que tu en penses qui est caché dans la malle?*
   - 'What-is-it that you think about it, what is hidden in the trunk?'

g. *Ce qu'il pense c'est qui est caché dans le sac?*
   - 'What that he thinks, is who that is hidden in the bag?'

h. *Tu crois quoi que Lala elle aime bien quoi?*
   - 'You believe what that Lala she likes what?'

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

We take the questions in (12) to instantiate PM, on an ID analysis. The matrix WH is not an expletive/non referential SM (as was the case with zero-Q°/ESK in (5)/(8) above), but the ordinary wh-phrase used to quantify over propositions (quoi/KESK 'what'), base-generated as the internal argument of the matrix verb think. These LD-questions thus contains two local wh-dependencies. CP1 is a question over propositions, CP2 a question over individuals. Syntactically, CP2 is adjoined to the matrix clause. Semantically, CP2 restricts the possible answers to the matrix wh-question to those and only those propositions that are possible answers to the subordinate question.

Both WHs can appear locally fronted to Spec CP (13a)/(12a), as is the case in German on the ID analysis in (3), or in-situ (13b)/(12b), as is the case in Hindi (14), a wh-in-situ language (with SOV word order). We also get the mixed pattern in (12b) where the matrix WH is fronted, while the subordinate one appears in situ.

(13) a. \[ cp1 \{ cp2 \ KESK \} \{ tu penses \ KESK \} \{ cp2 \ où \ elle est cachée \ où \ l'assiette \} \]
   - what-is-it-that you think where she is hidden the plate

b. \[ cp1 \{ cp2 \ Tu crois quoi ? \} \{ cp2 \ que je bois quoi \} \]
   - you believe what that I drink what

(14) \[ cp1 \{ cp2 \ juan kyaa \ socta hai \} \{ cp2 \ ki merii kisse baat karegi \} \]
   - Juan what think-PR that Mary who-INS talk do-FUT
   - 'Who does John think Mary will talk to?'

Now, Hindi also allows scope marking with embedded yes-no questions (that is, *whether* clauses), as illustrated in (15). Beck and Berman (2000), Dayal (1994), and Lahiri (2002) argue that (15) provides very strong evidence for an ID analysis in Hindi. The argument goes as follows. A DD analysis of (15) would involve covertly raising the expletive SM *kyaa* at LF to Spec CP1, and then scoping out *yaa nahiN* (*whether*) to Spec CP1, since it must replace the expletive SM at LF. Allowing, however, LF movement of *whether* would yield the wrong semantics, as it would it give this operator matrix scope and, thus, incorrectly predict that (15) can have as answers (the Hindi equivalent of) either ‘She said that Ramaa went home.’ or ‘She didn't say that Ramaa went home.’, while the only appropriate answers for (15) are either ‘She said that Ramaa went home.’ or ‘She said that Ramaa didn't go home.’ In contrast, an ID analysis correctly predicts the scope of *yaa nahiN* (*whether*).
L1 French also allows scope marking with yes-no questions, as shown in (16). CP1 is a question over propositions, CP2 a yes-no question restricting the possible answers to the matrix question to those and only those propositions that are possible answers to the subordinate yes-no question. In (16a), the latter is headed by the C° si ("whether/if"), while in (16b), we have a bare intonational yes-no question (by hypothesis, headed by a silent Q°, see (7b)).

(16) a. [CP1 [CP2 KESKi [ tu en penses Koko ] ] CP2 si [ l'assiette, elle est cachée dans le frigo ] ]
   ‘What do you think, Koko, about whether the plate, she is hidden in the fridge?’
   b. Qu’est-ce que t’en penses, Koko, si le lapin blanc et noir il est dans la boîte?
   ‘What-is-it that you think, Koko, about whether the white and black rabbit, he is in the box?’
   c. Qu’est-ce que tu penses, Koko, on a caché un chat?
   ‘What-is-it that you think, Koko, we hid a cat?’

Finally, adult Hindi allows scope marking with embedded yes-no questions on an alternative question reading, as in (17) where the relevant construal is ‘Which of these, coffee or tea, do you think that Chandra drank?’ This is also the case in L1 French. Thus, (18), volunteered in a context designed to elicit the target question ‘Who do you think pushed the trunk?’ can be paraphrased as ‘Which of these, a spider or a ghost, do you think pushed the trunk?’

(17) Tum kyaa socle ho ki Chandrane coffee pii thii yaa chai?
   ‘Do you think that Chandra drank coffee or that Chandra drank tea?’

(18) Kesk que tu penses si il y a une araignée qu'a poussé le coffre, ou ça soit un fantôme qu'a poussé le coffre?
   ‘What-is-it that you think if there's a spider that pushed the trunk, or it is a ghost that pushed the trunk?’

To conclude, the overt syntax in L1 French of LD wh-questions and LD yes-no questions, on either a true yes-no question reading or an alternative question reading, provides compelling evidence for an ID strategy in L1 acquisition. Note that the L1 English PM questions in (4), analyzed by Thornton as instantiating a DD strategy, could just as well be analyzed as instantiating an ID strategy, since we have an argumental/referential WH SM in the matrix clause.

3. On the semantics of wh-Scope Marking

Full-movement and partial-movement are not semantically equivalent, according to Dayal (1994), Herburger (1994), or Lahiri (2002). The claim is that, while the full movement question (19b) merely presupposes that George thinks that Rosa kissed someone, the PM question (19a) also presupposes that Rosa kissed someone. In Herburger's own words,

“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.”

(19) a. Was glaubt der Georg wen die Rosa geküßt hat?
   What believe George who Rosa kissed has
   ‘Rosa kissed someone, who does George think it was?’
   [Paraphrase provided by Herberger]
   b. Wen glaubt der Georg daß die Rosa geküßt hat?
   ‘Who does George believe that Rosa kissed?’

This semantic difference is not predicted on a DD approach to PM since full-movement (19b) and PM (19a) are semantically equivalent on a DD analysis—that is, assigned the same LF representation (given in (2) above). It follows, however, automatically from the syntax of PM on the ID approach. Recall that on the DD analysis, the embedded wh-question is adjoined to the matrix question, and thus outside the scope of the matrix attitude verb at LF. Since, moreover, the embedded question acts as a restriction on the matrix quantifier what, the existential presupposition associated with the embedded question in (19a), namely, that Rosa kissed someone, is inherited by the matrix question. The ID 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. Note that LD wh-in-situ patterns with full movement. Thus, (20b), with the appropriate intonation and stress on qui, 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 y a personne pour nous aider à nettoyer, mais Marie apparemment 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?'

Now, note crucially that in the classic protocol for eliciting LD questions (Crain and Thornton 1998), the presupposition underlying the embedded clause in the target LD question is always satisfied since the contexts provided in (21b-c), in order to elicit the LD question in (20a), make it clear that this presupposition (namely, that something is hidden in the box) must be part of the questioner's belief-state—that is, the child's beliefs.

(21) a. **Target LD**: What do you (Ratty) think is hidden in the box?
    **Presupposition underlying CP2**: There is something hidden in the box

b. **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.»

c. Both Ratty and the child participate in the guessing game. **Experimenter**: «I'm going to hide some things and then you and the rat guess. Hide your eyes! [Experimenter hides objects.] OK, you can come out now. There is something in the box, something under the blanket and something in the yogurt carton. Let's do the box first. You guess first and then the rat can have a turn. … »

The question then arises as to whether the appearance of an ID SM strategy, be it in L1 French or L1 English (since (4) can be reanalyzed as involving an ID, as argued above) could be correlated with the semantics of LD-questions in the child grammar. If such a correlation could be established, then it could provide the beginning of an answer to a tantalizing question: why do English children go through a *wh*-scope marking stage, but not a *wh*-in situ stage, when neither of these two options are allowed in the adult grammar?

### 4. Investigating the felicity conditions for LD questions in L1 acquisition.

To answer this question, we carried out a pilot study involving fourteen monolingual French 3.04 to 6.03 year old children and eight control adults, designed to elicit LD questions under the three experimental conditions illustrated in (22i-ii), for the target LD question in (22a). Pay close attention to the order in which the different conditions were tested, given in (23), and in particular, to the sequence from Condition 2 to Condition 1 on Day 2, illustrated with the protocol given in (24-25), translated from French.

(22) a. **Target**: What do you (Pierre) think that Mummy bought you for your birthday?
   i. **Condition 1**: **Felicitous context for the use of an adult SM structure**
      Context: Mummy bought Pierre something for his birthday and Pierre believes that she did.
   ii. **Condition 2**: **Infelicitous context for the use of a SM structure**
       Context makes it clear to the child/questioner that Pierre falsely believes that Mummy bought him something for his birthday.
   iii. **Condition 3**: Context makes it clear to the child/questioner that Mummy might or might not have bought Pierre something for his birthday, but that Pierre believes that she did.

(23) a. **Session/Day 1**: **5 target LDs**
   b. **Session/Day 2**: **5 target LDs**
   i. **Condition 2** (in (23b)]
   ii. **Condition 2. See (24)**
   iii. **Condition 1. See (25)**
   iv. **Condition 2**
   v. **Condition 3**

(24) **Condition 2: Infelicitous context for the use of SM** [Item (ii) in (23b)]

**Pierre**: «I'm happy today. It's my birthday. I'm sure Mummy 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 Mummy in the garden.»

Pierre leaves the kitchen. Mummy arrives with a big bag that she puts down on the floor. She opens it.

**Mummy**: «My god, it's Pierre'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!» Mummy closes her bag.

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

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**Target LD:** What do you think Mummy bought you?
*Mummy:* «No, darling, I didn't have time to buy your gift. I'm so sorry. »

(25) **Reverting to Condition 1: Felicitous context for the use of SM** [Item (iii) in (23b)]
The next day, Mummy buys Pierre his birthday gift. She arrives in the kitchen with the gift in her bag. Pierre is there doing his homework.
*Mummy:* «My little Pierre, with one day late, here is your birthday gift. »
*Experimenter* (in a low voice): «Pierre knows that there is a gift for him in Mummy's bag. Lets see what he thinks she bought him. Maybe he thinks it's a plane or perhaps a train. Ask him.»
**Target LD:** What do you think Mummy bought you?

We now report the results of this study, distinguishing four groups of children according to their patterns of responses.

### 4.1. Group 1: ‘No questions’ kids

Two children, the youngest age group of the four, never produced questions on all three conditions, indeed, not even yes-no control questions. These children systematically volunteered ‘answers’ instead of the target questions. Their pattern of response is illustrated in (26). Note that Camille (3;04) failed both Theory of Mind (ToM) tasks, while Enzo (4;01) failed the ‘Unseen displacement’ task but passed the ‘Unexpected content’ task.

(26) a. **Condition 1. Target:** What do you think the pirate is eating?
   Camille: ‘The pirate, he is eating an orange.’
   b. **Condition 2. Target:** What do you think Mummy bought (for dinner)?
   Camille: ‘Nothing.’ ‘She has nothing in the basket.’
   Enzo: ‘Nothing.’
   c. **Condition 2. Target:** What do you think is hidden in the trunk?
   **Context:** Ann has pulled a trick on her brother Pierre. As a result, he is scared because he falsely believes there is something hidden in the trunk.

### 4.2. Group 2: ‘Amazing’ kids

This group includes five 4 to 5;04 year old children, who volunteered LD-questions during session 1 (Condition 1). The typology of questions volunteered during session (1) is illustrated in the table below.

During session 2, however, four of these children produced no questions whatsoever under Conditions 2 or 3, thus reverting to the pattern of responses for Group 1 in (26), volunteering answers to the target questions. As shown in (27), these kids volunteer exactly the same types of responses under Condition 2 as the ‘No Questions’ kids.

| LD Movement | 22,5% | *KESK* tu penses que le pirate mange?
| In-situ | 6 | ‘What-is-it you think that the pirate eats?’
| | 1 | ‘Tu penses qu'elle aime quoi?’
| | | ‘You think that she likes what?’
| SM | 19,5% | *KESK* tu penses que # elle mange quoi, Anne?
| | 6 | ‘What-is-it that you think that # she eats what, Anne?’
| | | ‘Tu penses quoi que le pirate mange?'
| | | ‘You think that the pirate eats?’
| embedded-Verb Root Q | 22,5% | Anne, *KESK* elle mange?
| | 7 | ‘Anne, what-is-it that she eats?
| think Root Q | 10% | Tu penses quoi?
| | 3 | ‘You think what?’
| Non Question Response (NQR) | 22,5% | J'ai pas envie de le dire. (1st prompted Q)
| | 7 | ‘I don't feel like saying it.’

Table 1: Typology of questions elicited in session 1, Condition 1 ‘The Guessing Game’ (Total of 31 prompted LD-questions)

(27) a. **Session 2. Target:** What do you think Mummy bought?
   Rien. ‘Nothing.’
   Il y a rien dedans. ‘There is nothing in there.’
   Moi aussi, je me demande [elle quoi pense]. ‘Me too, I wonder (what she thinks).’
   Je sais pas. Peut-être un avion? ‘I don't know. Maybe a plane?’
   b. **Session 2. Target:** What do you think is hidden in the trunk?
   **Context:** Pierre falsely believes something is in the trunk. [See (26c)]
   Peut-être qu’il y a sa grande soeur. ‘Maybe there is his big sister.’
   Peut-être qu’il y a des souris. ‘Maybe there are mice.’
In fact, out of forty-one prompted LD-questions in session 2, only a single question was elicited, crucially an embedded-Root question volunteered under Condition 1 and only on the second prompt, as illustrated in (28b).

(28)  
(a) **Context:** Mummy tells Pierre that she finally bought his birthday day gift. [See (25), item (iii) in (23b).]  
(b) **Response on the 1st prompt:** On sait pas ce qu'elle a acheté. ‘We don’ t know what she bought.’  
(c) **Response on the 2nd prompt:** KESK elle a acheté? ‘What-is-it that she bought?’

We include a fifth child, Benoît (5;04), in this group. Benoît had a very telling pattern of responses. Under session 1 (Condition 1), a 100 % of his responses were questions. He volunteered an embedded-Verb Root question, three SM questions, and two LD-questions (one wh-movement, one wh-in-situ). In session 2, however, Benoît patterned like the four other children in the group for the first two stories, volunteering again answers to the target LD-questions, as illustrated in (29b). However, for the third item in session 2 (given in (25) above), where we crucially revert back to a felicitous context for scope-marking, Benoît finally produced the target LD-question, thought on the second prompt only, as illustrated in (29c). From then on, Benoît volunteered LD questions for the two last stories of the session (Conditions 2-3). The results for theses five children in Group 2 (including Benoît) are given by the graph in Table 3.

(29)  
(a) **Condition 2:** Elle a rien acheté. ‘She didn't buy anything’  
(b) **Condition 1, 1st prompt:** Peut-être un hélicoptère. ‘Maybe a plane.’  
(c) **2nd prompt:** Pierre, KESK tu penses que ta maman t’a acheté? ‘Pierre, what-is-it that you think that your Mummy bought you?’

4.3. **Group 3: ‘Perfect’ kids**

This group is the oldest age group. It includes five children, ranging in age between 5;03 and 6;03. The results for these children are given by the graph in Table 4 below. Note, in particular, how their % of LD questions jumps from
55% under Condition 1 to 86% under Conditions 2-3. That is, under Conditions 2-3, these children volunteered 78.5% of LD questions (all involving long movement) and on the first prompt, for a total of 23 elicited questions. In contrast, under Condition 1, these children volunteered only 42.5% of LDs questions (again involving long movement) on the first prompt, for a total of 40 elicited questions. Why is the children’s performance on LD questions significantly better under Conditions 2-3, then under Condition 1?

Because Conditions 2-3, in fact, provide a much more appropriate context for asking a LD question. Recall that under Condition 1 (“The Guessing Game”, given in (21) above), the lead in is “We know there is cat hidden in the trunk but ask the rat what he thinks.” Now, in this context, it would be just as appropriate to ask Ratty either the embedded-Root question ‘What is hidden in the trunk?’, or the target LD-question ‘What do you think is hidden in the trunk?’. In contrast, under our conditions 2-3, the contexts provided make it clear to child/questioner that the proposition underlying the subordinate clause in the target LD-question — namely, that there is something hidden in the trunk — is either false (Condition 2) or might be false (Condition 3). This context is thus felicitous for a LD question, but infelicitous for either the embedded-Root question ‘What is hidden in the trunk?’ or a SM question on the ID analysis (e.g. ‘What do you think what is hidden in the trunk?’) since both presuppose that something is hidden in the trunk. It thus comes as no surprise that all of the children volunteering questions produced embedded-Root questions under Condition 1, but never under Conditions 2-3. We found the same pattern with our adult control group.

More generally, the typology of non-target, unexpected questions volunteered by Group 3 was always appropriate in the given context. In particular, they volunteered 6% of yes/no indirect Qs, as illustrated in (30), under condition 1. Now, (30) is an appropriate question since a cooperative answer would be ‘Yes. A cat.’ and not merely, ‘Yes. I know.’. Indeed, adult controls also volunteered yes/no indirect Qs. Finally, 8% of think Root questions (e.g. ‘What do you think?’) where volunteered under all 3 conditions. This is also a cooperative question in so far as the lead in is “Ask Pierre what he thinks.”

(30) Est-ce que tu sais ce qui est caché dans la malle?
‘Do you know what (that) is hidden in the trunk?’

Table 4. ‘Perfect’ kids.

### 4.4 Group 4: ‘Direct Dependency’ kids

The last group includes two 4;10 and 5;04 year old children. The results for these children are given by the graph in Table 5. These children volunteered DD scope-marking questions on all three conditions — that is, LD-questions involving fronting to the left periphery of the subordinate clause with no overt scope marker in the matrix, as illustrated in (31). Recall that on a DD analysis, partial-movement in (31a-b) has the syntax of long-movement at LF (see the derivation given in (6) above) and, as such, is semantically equivalent to long-movement. (31) is thus expected to be felicitous on all three conditions, just as full-movement is.

(31) a. Tu penses que quoi a acheté Anne? ‘You think that what bought Anne?’
   b. Tu penses quoi que ton papa t’as acheté? ‘You think what that your father bought you?’

What is surprising, however, is that DD is the primary strategy used by these children for establishing LD dependencies: it represents 76% of their responses. In particular, Lea (5;04) volunteered no LD-question, while Zéphir (4;10) volunteered one full movement question. This is surprising since in the L1 English elicited production data, no children are reported to produce mostly/only partial movement. This result is, however, less surprising in light of the spontaneous production data from bilingual Cantonese/English acquisition and the Chinese Pidgin English data in (9-
10) above. Recall that the DD strategy with no overt SM in the matrix is licensed only in grammars, where both (full) wh-movement and wh-in-situ coexist. We will go a step further and argue that the DD strategy in (31) reflects in fact an adult strategy in non-standard French. Thus, consider the embedded interrogative cleft illustrated in (32), volunteered by an adult control. Drawing a parallel between the child (31) and the adult (32), we could analyzed (31) as an (adult) truncated embedded wh-cleft, as illustrated in (33).

(32) Tu penses que c’est qui qui joue du tambour?
‘You think that it’s who that is playing drums?’

(33) a. Spellout: [Q, you think [that [what, that your father bought]]]
   b. LF: [what, that your father bought]

Now, (32) in non-standard adult French or (31) on this truncated cleft analysis are SM structures raising the canonical theoretical issues that PM raises — namely, how do we assign matrix scope to the embedded (clefted) wh? On a DD analysis, this issue is resolved by raising the partially fronted/clefted wh to the matrix Spec CP at LF, as in (33b).

We conclude that the DD strategy is productive in L1 French because it reflects in fact a scope marking option of the adult language. In other words, (non-standard) adult French, just like L1 French, allows wh-scope marking.

![Diagram](image)

Table. 5. ‘Direct Dependency’ kids.

### 4.5. On the felicity conditions of LD questions in L1 acquisition

We have identified three age groups according to their pattern of responses: Group 1 (3;04, 4;01), the ‘No questions’ kids; Group 2 (4 to 5;04) and Group 4 (4,10, 5;04), the ‘Amazing’ kids and the ‘DD’ kids; and Group 3 (5;03 to 6;03), the ‘Perfect’ kids.

The pattern of results that emerge from this pilot study suggest that some children have not yet acquired the semantics, the felicity conditions for LD questions (be it LD wh-movement or LD wh-in-situ). In particular, recall that the response-patterns for Group 2 during session 2 is the same as those of the two younger children in Group 1 who failed to produce questions altogether, volunteering answers for the target LD-questions (see 26-27 above). That is, although Group 2 produced LD, SM and Root questions in session 1 under Condition 1 (80,5% of their responses), three of these children produced no questions in session 2 whatever the experimental condition. One child produced a single embedded-Root question under Condition 1 (28). While the fifth child (Benoit) only started volunteering LDs questions in session 2, once we reverted back to the context for Condition 1 (and only on the second prompt, 29). Note that the children in Group 2 passed both ToM tasks, except for Melissa who passed the Unseen displacement task, but failed the Unexpected content task. This pattern, however, also holds of two of the older children in Group 3, the ‘perfect’ kids.

We conclude that the children in Groups 2 have not yet mastered the semantics, of either LD movement or LD wh-in-situ since they fail to produce questions in contexts where only an LD question is appropriate. These children appear to have the semantics, the felicity conditions of SM in adult Hindi or German, as described by Dayal, Herburger or Lahiri. Recall that the SM counterpart of (34a) in adult Hindi or German would be infelicitous in the context provided by Condition 2 since the presupposition behind the subordinate clause in the target question cannot be satisfied in the context provided. We thus take the response-pattern of Groups 1 and 2 under conditions 2-3 to reflect presupposition failure. That is, the child fails to produce the target LD-question in (34a) because the
presupposition underlying the subordinate clause in the target question, that is, that Mummy bought something, cannot be projected up to the matrix clause, since it has been explicitly denied in the discourse context provided.

(34)a. Target LD: ‘What do you think Mummy/Daddy bought?’
   b. Responses provided by Group 1 & Group 2 under Conditions 2-3:
      ‘Nothing.’
      ‘I don’t know. Maybe a plane?’
      ‘Me too, I wonder’ [what he thinks].

The preliminary results of a study carried out with twenty 5 to 6 year olds appears to confirm this conclusion. Interestingly, another pattern of responses emerged under Conditions 2-3. When the child knows that Pierre's presupposition is/might be false, instead of asking the target LD, s/he seeks to verify the presuppositions that Pierre holds with a yes-no question:

(35)a. Est-ce que tu sais qu’il y a rien dans la panier?
   ‘Do you know there is nothing in the basket?’
   b. Tu penses qu’il y a un monstre dans la malle ou y’a pas de monstre?
   ‘You think there is a monster in the trunk or there is no monster the trunk?’
   c. Tu penses qu’elle a acheté quelque chose ou tu penses qu’elle a rien acheté?
   ‘You think she bought you something or you think she bought you nothing?’
   d. Il y a quelque chose dans la malle?
   ‘Is there something in the trunk?’

We started out this last section by asking whether the appearance of ID strategies in L1 acquisition could be correlated with the semantics of LD-questions in the child grammar, hypothesizing that such a correlation could in turn explain why English children go through a wh-scope marking stage, but a not a wh-in-situ stage, when neither of these two options are allowed in the adult grammar. The answer is positive in so far as the pattern of responses for Group 2 in session 2 vs. session 1 suggests that children go through a developmental stage in L1 acquisition where they have the semantics of SM questions in adult Hindi or German.

The paradox, however, is that although the pattern of responses for the ‘amazing kids’ in session 2 show that they have not yet mastered the semantics of LD extraction or LD wh-in-situ, they appear nonetheless to have the syntax of LD extraction/wh-in-situ since they do produce these LD questions in session 1 (except for Charles, the youngest):

(36) Session 1, Condition 1 ’The Guessing Game’
   a. Charles (4): volunteered only SM LD-questions (both DD and ID)
   b. Eglandine (4:04):
      KESK que tu penses the pirate mange?
      ‘What-is-it that you think the pirate eats?’
   c. Mélissa (4:09):
      KESK que tu penses qu’elle mange, le pirate?
      ‘What-is-it that you think that she eats, the pirate?’
      Tu penses qu’elle mange quoi?
      ‘You think that she eats what?’
   d. Maxime (5:04): volunteered mostly full-movement LDs
      KESK que tu penses que le pirate mange?
      ‘What-is-it that you think that the pirate eats?’
   e. Benoît (5:04)
      KESK tu penses que ta maman t’a acheté?
      ‘What-is-it that you think that Mummy bought you?’
      Tu penses qu’elle aime quoi?
      ‘You think that she likes what?’

The pattern of responses under conditions 2-3 for Group 3, the ‘perfect’ kids, suggests that children that have acquired the semantics of LD-questions have acquired their syntax, since these children's performance on LD questions improved significantly under Conditions 2-3 (86 % vs. 55 % under Condition-1). Conversely, the pattern of responses for Group 2, the ‘amazing’ kids, in session 2 vs. session 1, suggests that children that have not yet acquired the semantics of LD extraction/wh-in-situ, might nonetheless have the surface adult syntax of LD-questions.

These findings thus suggests a lag in the acquisition of the semantics vs. the syntax of subordination On the assumption that there is a tight match between syntactic structure and semantic structure—that is, that the semantics should be read off LF, the ultimate representation built by the syntax (that Syntax yields transparent LFs)—this conclusion raises the issue of the syntax-semantics mapping in language development.

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