ON the FELICITY CONDITIONS
for LONG-DISTANCE QUESTIONS in L1 ACQUISITION

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Wh-Scope-Marking has been argued to represent a developmental stage in L1 acquisition on the basis of both production data: children sporadically/consistently produce Partial-Movement (PM) questions in English (Thornton 1990, Crain & Thornton 1998), Dutch (van Kampen 1997), or French (Oiry 2002, 2006, Oiry & Demirdache 2006, Strik 2003, Jakubowicz 2004) ; and comprehension data: Roeper & de Villiers (1994) take 'medial *wh*-answers' as evidence for a transitional scope-marking stage (see also McDaniel, Chiu & Maxfield 1995).

We offer new evidence for Scope-Marking (SM) in L1 acquisition based on the semantics of scope-marking questions vs. full-movement & *wh*-in-situ.

1. Wh-Scope Marking (SM) in French L1

Oiry & Demirdache (2006; O&D) provide empirical arguments for alternative *wh*-scope marking strategies in L1 French involving either an *indirect* or a *direct* dependency, illustrated respectively in (1) and (2) below.

(1) *Indirect Dependency*:
    a. **Qu'est-ce que** tu penses l'assiette **où** elle est cachée ?
       '*What* do you think the plate *where* she is hidden?'
    b. Tu crois **quoi** (que) Lala elle aime bien **quoi** ?
       'You believe *what* (that) Lala she likes *what* ?'
    c. **Qu'est-ce** *que* tu penses **qu'est-ce** *qui / ce qui* est caché dans la malle ?
       '*What*-is-it-that you think *what*-is-it-that/*what* that is hidden in the trunk?'
    d. **Qu'est ce que** tu penses que # elle mange **quoi**, Anne ?
       '*What*-is-it-that you think that she eats *what*, Anne
    e. Elle mange **quoi**, Anne ? Tu penses **quoi** ?
       'She eats *what* Ann? You think *what*?'

(1) is analyzed on par with SM in Hindi (Dayal 1994, 2000 or Lahiri 2002) or German on Herburger's (1994) analysis: (1) involves 2 clauses, each containing a contentful *wh* and interpreted as a *wh*-question. CP1 is a question over propositions. CP2 is a question over individuals, restricting the matrix question to those (and only those) propositions that are possible answers to the subordinate question. Note that for French L1, either both *wh*s appear at spell-out in situ (as in Hindi), or locally fronted to Spec CP (as in German), or we

even get the mixed pattern in (1)d. The matrix *wh* is the *wh*-phrase used to quantify over propositions *quoi*, *que*/*KESK* or (*ce*) *que*.

(2) *Direct Dependency*:
   a. Tu penses **où** elle est cachée, l'assiette ?
      'You think *where* she is hidden, the plate?'
   b. Penses **comment** les amis, i rentrent chez eux ?
      'Think *how* the friends, they go home?'
   c. Tu penses **qui** qui me lit des histoires ?
      'You think *who* that reads me stories?'
   d. Tu penses que **quoi** a acheté Anne ?
      'You think that *what* bought Anne?'
   e. Tu penses **quoi** qu'il mange, le policier ?
      'You think *what* that he eats, the policeman?'

(2) is analyzed on par with SM in German under McDaniel's (1989) analysis: a partially moved *wh*-phrase is licensed by a *non-referential/expletive* SM/Q morpheme merged in an operator position in the matrix CP (either Ø or an intonational Q morpheme, Oiry 2002).

2. The Semantics of Long *wh*-Movement (LM) vs. Scope-Marking

(3) a. LD *Movement*:
Wen	glaubt	der	Georg	daß	die	Rosa	geküßt	hat?
What	believe	George		that	Rosa		kissed	has

   'Who does George believe that Rosa kissed?'
   b. *Scope-Marking*:
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?'

Herburger (1994: 2) argues that LM and SM do not have the same felicity conditions. In (3)b, "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 (3)a, "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*."

The difference between the semantics of LM vs. SM follows from the different positions that the embedded clause occupies in the two types of structures and assumptions about presupposition projection (Dayal 1994, 2000, Herburger 1994, Lahiri 2002). SM involves 2 contentful *wh*-questions. On Herburger's or Lahiri's analysis, the subordinate *wh*-question is outside the scope of the matrix, propositional attitude verb at LF and in the restriction of a presuppositional determiner: the matrix *what*. The SM question thus inherits the

presupposition associated with the embedded *wh*-clause. This entails that a SM question will not be felicitous in a context where the existential presupposition behind the embedded clause is denied, that is, if the context makes it clear to the speaker that George's belief about Rosa is false.

LD *wh*-in-situ patterns like long movement: with the appropriate intonation and stress on *qui*— (4) is felicitous in the context provided which makes it clear that the speaker does not accept the existential presupposition behind CP2 (that someone will help us clean up).

(4) *LD wh-in-situ in French* (example adapted from Dayal 2000)
    a. A: Il y jamais personne pour nous aider à nettoyer. Toi tu le sais et moi je le sais, mais Marie apparemment ne le sais pas.
        'Noone ever helps clean up. I know that, and you know that, but Mary apparently doesn't.
    b. 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?'

Could there then be a correlation between the appearance of SM strategies in child language and the presuppositions of these questions in adult Hindi or German? More generally, what are the felicity conditions for LD questions in L1 acquisition?

3. The 'Classic' Protocol for Eliciting LD Questions (Thornton 1990, Crain & Thornton 1998)

In the classic protocol for eliciting LD questions, the presupposition underlying the embedded clause in the target question is *always* satisfied. That is, the context provided in (5) from Crain & Thornton (1998: 190), makes it clear that the presupposition that something is hidden in the box must be part of the questioner's belief-state —that is, the child's beliefs.

(5) a. *Target LD*: What do you (Ratty) think is 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, right? We know 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 …We know there is a marble hidden in the box, but ask the rat what he thinks.
    c. *Adjusted protocol for eliciting subject extraction questions*:
        Experimenter: I'm going to hide some things and then you and the rat guess. Hide your eyes! 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. …

4. Investigating the Felicity Conditions for LD Questions in L1 Acquisition

We conducted a pilot study involving 14 monolingual French children (3.04 to 6.03) and 18 control adults, designed to elicit LD-questions under 3 different experimental conditions, illustrated in (6)b-d for the target LD question in (6)a. Pay close attention to the order in which the different conditions where tested, given in (7), and in particular, to the sequence from Condition #2 to Condition #1 on Day 2, illustrated with the protocol given in (8) (translated from French).

(6) a.   *Target LD question:*
   What do you (Leo) think that Mummy bought you for your birthday?
   b.   *Condition #1*: Felicitous context for the use of a SM structure
   Mummy bought Leo something for his birthday and Leo believes she did.
   c.   *Condition #2:* Infelicitous context for the use of a SM structure
   Context makes it clear to the child/questioner that Leo falsely believes that Mummy bought him something for his birthday.
   d.   *Condition #3:* Context makes it clear to the child/questioner that Mummy might or might not have bought Leo something for his birthday, but that Leo believes that she did.

(7) a.   *Session/Day 1*   b.   *Session/Day 2*
   Comprehension tests   ToM tests (Unseen Displacement, Unexpected Content)

   Production of 5 LD questions   **Production of 5 LD questions**
   5 stories under Condition #1   5 stories: i.   Conditon #2
   'The Guessing Game'   **iia.   Condition#2**
                                                       b.   **Condition#1**
                                                       iii.   Condition#2
                                                       iv.   Condition#3

(8) a.   *Infelicitous context (iia) in (7)b for the use of SM (Condition #2)*
   Leo: 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. < Leo leaves.>
    <Mummy arrives in the kitchen. She has a big bag that she puts down on the floor. She opens it>
   Mummy: My god, it's Leo'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! <Closes her bag>
   Experimenter: <in a low voice so that Leo can't hear.> You and I, we both know that the bag is empty and that Mummy didn't buy anything. But Leo 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.
   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.
b. *Felicitous context (iib) in (7)b for the use of SM (Condition #1)*
<The next day, Mummy buys Leo his birthday gift. She arrives in the kitchen with the gift in her bag. Leo is there doing his homework. >
Mummy: My little Leo, with one day late, here is your birthday gift.
Experimenter: <in a low voice so that Leo can't hear.> Leo 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 present the results for our protocol below. We had 14 children aged 3;04 to 6;03. We distinguish 4 groups of children according to their response patterns.

4. Results
4.1. Group 1: 'No questions' kids

Two children never produced questions (or indeed even *yes/no* control questions) on all three conditions. These two children, the youngest age group of the 4, systematically volunteered 'answers' instead of questions as illustrated in (9). Note that Camille (3;04) failed both ToM tasks ant that Enzo (4;01) failed the 'Unseen displacement' task but passed the 'Unexpected content' task.

(9) 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 Leo. As a result, he is scared because he falsely believes there is something hidden in the trunk.
Camille: 'A mouse.' Enzo: 'A joke.'

4.1. Group 2: 'Amazing' kids

Four children (4 to 5;04) volunteered questions during session 1 (Condition #1), but systematically failed to produce questions during session 2 whatever the experimental condition (except for 1 root question under Condition #1, given in (10)c below), volunteering again 'answers' instead of questions. That is, out of 41 questions prompted on Day/Session 2, only 1 root question was volunteered.

(10) a. Condition #1, context (iib) in (7)b, see protocol given in (8)b:
b. On sait pas ce qu'elle a acheté. (Volunteered response on 1[rst] prompt)
'We don' know what she bought.'
c. Qu'est-ce qu'elle a acheté ? (Response on the 2nd prompt)
'What did she buy?'

The typology of questions volunteered during session 1 (Condition #1) are given in Table 1 below, for a total of **31** prompted questions.

Table 1

Type of response volunteered Session 1, Condition #1		
NQR (Non question response)	22,5% 7	J'ai pas envie de le dire. 'I don't feel like saying it.'
LD Movement In-situ	22,5% 6 1	*Kesk* tu penses que le pirate mange ? '*What* do you think the pirate eats?' Tu penses qu'elle aime *quoi* ? 'You think that she likes *what*?
SM	19,5% 6	Tu penses *quoi* que le pirate mange ? 'You think *what* that the pirate eats?'
embedded-V Root Q	22,5% 7	Anne, *kesk* elle mange ? 'Anne, *wha*t-is-it-that she eats?
think Root Q	10% 3	Tu penses *quoi* ? 'You think *what*?'
Other	3% 1	Tu penses qu'il y a une souris ? 'You think there is a mouse?

The important result for these 4 children is that, during session 2, these children produced **no questions under Conditions #2-3**, volunteering once again answers instead of questions, for instance: 'There is nothing in there.'; 'Me too, I wonder [what he bought]'; or 'Maybe there is his big sister.' (for the context where Leo falsely believes something is in the trunk given in (9)c). We thus find for Conditions #2-3, the same pattern of responses as for Group 1 (illustrated in (9) above). The results for these 4 children are given by the graph in Table 2.
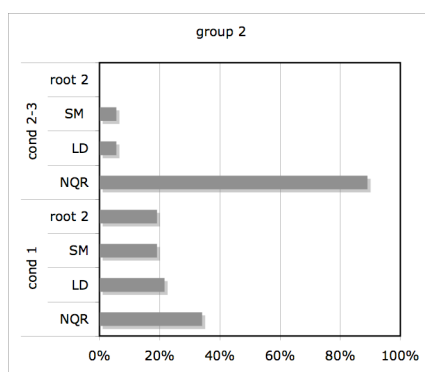
Table 2
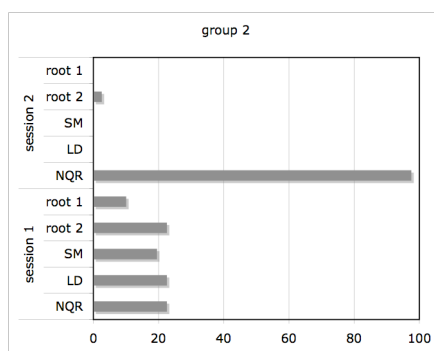
We include a fifth child, Benoît (5;04), in this group. His pattern of responses was the following. Under Session 1 (Condition #1), 100 % of his responses were questions (Benoît volunteered 1 *embedded-V* Root Q, 3 SM Qs, and 2 LD Qs, 1 full movement LD and 1 in-situ LD). In session 2, Benoît patterned like the 4 other children in the group for the first two stories (Condition #2) volunteering answers again instead of questions : 'She didn't buy anything', 'There is nothing in her bag'. However, for the third story ((iib) in (7)b) provided in session 2, where we crucially revert back to a *felicitous* context for SM (see (8)a-b), Benoît finally produced the target LD question (on the second prompt), as illustrated in (11) below. From then on, Benoît volunteered LD questions for the two last stories of the session (Condition # 2, Condition # 3).

The results for the 5 children (aged 4 to 5;04) in Group 2 (including Benoît) are given by the graph in Table 3.

(11) a. Maybe a plane. [Response volunteered on the 1ʳˢᵗ prompt]
　　 b. Leo, *kesk* tu penses que ta maman t'a acheté ?' [2ⁿᵈ prompt].
　　　　 'Leo, what you think that your mummy bought you?'
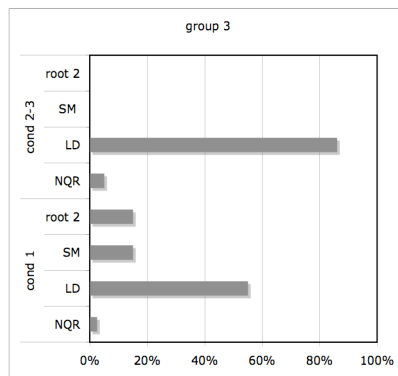
Table 3

4.3. Group 3: 'Perfect' kids

This group includes 5 children, aged 5;03 to 6; 03 (the oldest age group of the 4 groups). The results for these 5 children are given by the graph in Table 4. Note, in particular, that the % of LD questions in this group *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 (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 (involving **long movement**) on the **1rst** prompt (for a total of **40** elicited questions). In other words, the children's performance on LD questions was significantly better under Conditions #2-3, then under conditions #1. Why? Because Conditions #2-3, provide a much more appropriate/felicitous context

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for asking a LD question. Recall that under Condition #1 ('The Guessing Game', see (5)), 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 is 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 presupposition that there is something hidden in the trunk is crucially not satisfied. 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. It thus comes as no surprise that all of the 3 groups of children (volunteering questions) did volunteer *embedded*-Root questions under Condition #1, but never under Conditions #2-3. (We found the same pattern with our adult control group.) Note also that Group 3 volunteered the same % of *embedded*-Root questions as of SM questions (15%) under Condition #1. Again, this is not surprising since they are equally felicitous in the context provided by 'The Guessing Game'.

More generally, the typology of non target/unexpected questions volunteered by Group 3 (as illustrated in (12)) was always appropriate in the given context. That is, 6% of *yes/no indirect Qs* (illustrated in (12)a) where volunteered under condition #1. (12)a is appropriate since a cooperative answer would be 'Yes. A cat.' and not merely, 'Yes. I know.'. (Again we found the same pattern with our adult control group.) 8% of *think* Root questions (illustrated in (12)b) where volunteered under all 3 conditions. This is a cooperative question since the lead in is "Ask Leo what he thinks." Finally, the volunteered question in (12)c is also appropriate in the context where Leo is scared because he falsely believes something is in the trunk.

(12)　　a.　*Est-ce que* tu sais *ce* qui est caché dans la malle ?
　　　　　　　'Do you know *what* is hidden in the trunk?
　　　　　b.　'What do you think?'
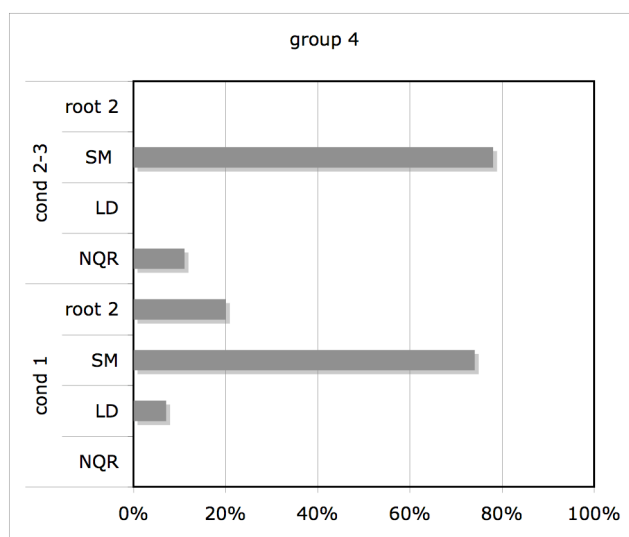　　　　　c.　'Why are you scared?

Table 4

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4.4. Group 4: 'Partial-Movement' kids

This group includes 2 children (aged 4;10, 5;04) who produced partial movement under all three conditions, as we can see from the graph in Table 5.

Table 5

The PM questions of these two children always involved a direct dependency strategy (see (2)); that is, movement to the left periphery of the subordinate IP with **no** overt scope marker in the matrix:

(13) 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?'

We conclude that direct dependency appears to be the primary strategy used by these two children for establishing LD dependencies (76% of their responses). Lea (5;04) volunteered no long movement or LD *wh*-in-situ and Zéphir (4;10) volunteered only 1 long movement structure. This is surprising since, in the *English* production data reported in the literature, no children are reported to produce mostly/only partial movement. This result suggests that direct dependency in L1 French —no overt SM in the matrix— be correlated with the *wh*-in-situ option in French. This correlation confirms Fanselow's (to appear) generalization that "Simple Partial Movement" (that is, without an overt scope marker) always coexists with both the **wh-in situ** strategy and full *wh*-movement (see O&D for discussion). Further support for this correlation between *wh*-in-situ and the direct

dependency strategy in L1 French is provided by Yip & Matthews' (2006) longitudinal study of four Cantonese-dominant bilingual children (exposed to Cantonese and English from birth). They report that these children spontaneously produce PM questions without an overt scope-marker in the matrix, as illustrated in (14). Cantonese/English bilingual kids just like French kids have both *wh*-in situ and long *wh*-movement in their grammar/input.

(14)   a.   You think **what** nut I am getting now? (Timmy 4;01;29)
       b.   You think **where** is Sophie? [hiding under table] (Sophie 5;03;02)

5. On the Felicity Conditions for LD Questions in L1 Acquisition

We have thus identified four age groups according to their pattern of responses: Group 1 (**3;04, 4;01**) the 'No questions' kids; Group 2 (**4 to 5;04**) the 'Amazing' kids; Group 4 (**4,10, 5;04**) the 'Partial Movement' 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 *wh*-questions (be it full-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: they volunteering answers/comments instead of questions (see (9) and (15) below). That is, although Group 2 produced LD /SM/ 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**. The fourth child (Benoît) only started volunteering LDs questions in session 2, once we reverted back to the context for Condition #1 (and only on the 2nd prompt, see (11)).[1]

   Conversely, for some children (Group 3, the 'perfect' kids), their performance on LD questions was significantly better under Conditions 2-3 (**55 %** under Condition-1 vs. **86 %** under Conditions 2-3) because the contexts provided are more appropriate for asking an LD question (see 4.3).

   We take the response-pattern in (9) and (15) to reflect *presupposition failure*.

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

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   1. Note that two of the children in Group 2 passed both ToM tasks except for Mélissa 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.

Recall that the SM counterpart of (15)a in adult Hindi or German would be infelicitous in the context provided by Conditions #2-3 since the questioner knows that there is no true answer to the (embedded) question *What did Mummy buy?* (See section 2).

We thus conclude that the children in Group 2 (aged 4 to 5;04) have not yet mastered the semantics, of either LD movement or LD *wh*-in-situ. These children appear to have the semantics, the felicity conditions of SM in adult Hindi or German, as described by Dayal, Herburger and Lahiri. That is, the child fails to produce the target LD-question (15)a 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.

Crucially, however, the children in Group 2 appear to have acquired the *syntax* of LD extraction/*wh*-in-situ since they do produce these LD questions in Session 1 (except for Charles, the youngest, age 4, who volunteered only SM LD questions), as illustrated below:

(16)   Session 1, Condition #1 'The Guessing Game'
        a. Eglantine (4;04):
            Kesk que tu penses le pirate mange?
            '*What-is-that* you think the pirate eats?'
        b. Mélissa (4;09):
            Kesk que tu penses qu'elle mange, le pirate?
            '*What-is-that* you think that she eats, the pirate?'
            Tu penses qu'elle mange *quoi* ?
            'You think that she eats *what*?'
        c. Maxime (5;04) (volunteered only/mostly full-movement LDs)
            Kesk que tu penses que le pirate mange?
            '*What-is-that* you think that the pirate eats?'
        d. Benoît (5;04)
            'Leo, *kesk* tu penses que ta maman t'a acheté ?'
            'Leo, *What-is-that* you think that your mother bought you?'
            Tu penses qu'elle aime *quoi* ?
            'You think that she likes *what*?'

The pattern of responses for group 2 in session 2 (Conditions #2-3) vs. Session 1 (Condition #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. Children that have not yet mastered the *semantics* of LD extraction / LD *wh*-in-situ, might nonetheless have the surface grammar of LD extraction / LD *wh*-in-situ.

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