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ON THE SYNTAX AND SEMANTICS OF LD QUESTIONS IN CHILD FRENCH

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1. Introduction

Partial-Movement (PM) has been argued to represent a developmental stage in the acquisition of Long-Distance (LD) questions on the basis of English, Dutch and French elicited production data (Crain and Thornton (1998), Oiry and Demirdache (2007), and references therein). There are two competing analyses of PM in adult grammars: *Indirect Dependency* (ID) and *Direct Dependency* (DD). We claim that both strategies are attested in L1 French. We provide novel arguments for ID based on the syntax of exceptional LD *yes-no/alternative* questions in L1 French. We argue that children go through a stage where they appear to have the felicity conditions for scope-marking questions on the ID analysis, but not those of full movement/WH-in-situ, since they fail to produce questions in experimental contexts satisfying the felicity conditions of LD questions but crucially not those of scope-marking, on the ID analysis. We take this conclusion to provide strong evidence for an ID strategy in L1 acquisition.

2. *Wh*-scope marking strategies in adult grammars

On McDaniel's (1989) analysis of PM, (1a) contains only one argumental WH: the medial *wen*. *Was* is an expletive Scope-Marker (SM), merged in the matrix C(P), forming a chain with the medial WH whose scope it marks in the overt syntax ((1i)). At LF, *was* undergoes expletive replacement ((1ii)). On a DD analysis, PM in (1a) has thus the syntax of long-movement at LF. In contrast, on the ID analysis ((1iii)), *was* is not an expletive SM but the ordinary WH 'what', merged as the object of *believe*. (1a) thus contains two questions: CP1, a question over propositions, and CP2, a question over individuals. CP2 is adjoined to CP1; the link between the two is established *indirectly* via coindexation of *was* with CP2. *Was* questions over the set of propositions that George stands in the

believe relation to. CP2 restricts the possible answers to CP1 to those and only those propositions that are possible answers to the embedded question. The interpretive procedure thus creates the effect of LD extraction.

(1) *Partial Movement in German*
a. [$_{CP1}$ **Was** glaubt der Georg [$_{CP2}$ **wen** die Rosa geküßt hat?
what believe George **who** Rosa kissed has
b. Who does George believe Rosa kissed?
Direct Dependency analysis (McDaniel 1989)
i. Spellout: [$_{CP1}$ $\mathbf{Q_i}$/**was**$_i$ [believe G. [$_{CP2}$ **who**$_i$ [R. kissed $\mathbf{t_i}$
ii. LF: [$_{CP1}$ **who** [believe G. [$_{CP2}$ **t'**$_i$ [R. kissed $\mathbf{t_i}$
Indirect Dependency analysis (Dayal 1994)
iii. [$_{CP1}$ [$_{CP1}$ **what**$_i$ [believe G. $\mathbf{t_i}$]] [$_{CP2i}$ **who**$_j$ [R. kissed $\mathbf{t_j}$]]]

(2) **What** do you think **which Smurf** really has roller skates?

Crain and Thornton (1998) argue English children produce PM questions ((2)). On their analysis, *what* in (2) is an expletive SM signaling wide scope of the medial WH, on a par with the DD analysis of PM ((1i-ii)).

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 both SM strategies. The findings reported here are based on elicited production tasks carried out with sixty four 2;11 to 6;03 year old monolingual French children. Consider first the syntax of the exceptional LD questions in (3), all containing a single contentful WH, partially fronted to the left periphery of the embedded clause.

(3) *Direct Dependency scope-marking in L1 French*
a. Tu penses **quoi** qu'il mange, le policier?
'You think *what* that he eats, the policeman?'
b. Tu penses **où** elle est cachée, l'assiette?
i. *Spellout*: [$_{CP}$ $\mathbf{Q_i}$ [you think [$_{CP}$ **where**$_i$ [she is hidden $\mathbf{t_i}$ the plate
ii. *LF*: [$_{CP1}$ **where**$_i$ [you think [$_{CP2}$ **t'**$_i$ [she is hidden $\mathbf{t_i}$ the plate
c. **ESK** tu penses **où** elle est cachée, l'assiette?
Q you think *where* she is hidden the plate

(4) a. You think **what** nut I am getting now? *Chinese-English L1*
b. You thinkee **what time** ship can come? *Pidgin English*

c. **Do** you think **what** is in the bag? *Japanese L1/English L2*

We posit a zero Q°-morpheme merged in the matrix CP in (3a-b) licensing the medial WH ((3i)). Assuming the medial WH replaces Q° at LF ((3ii)), then the syntax of these questions involves a DD strategy, parallel to German PM on a DD analysis ((1i-ii)). We take the silent Q° licensing PM in the child grammar to also license WH-in-situ—e.g. **[Q_i** tu vas **où$_i$]** 'You go where?—and bare yes-no intonational questions—e.g. **[Q** tu pars] 'You leave?'—in adult French. The syntax of the exceptional LD question in (3c), where an overt SM appears, supports this claim. There are two SMs in French: ESK restricted to yes-no questions and zero-Q° licensing bare yes-no questions and WH-in-situ. Children use both to license PM.

Whether PM in (1a) involves a DD or an ID hinges on the status of *was*: is it an expletive WH acting as a SM (DD)? or the ordinary WH 'what' quantifying over propositions and merged as the object of *think* (ID)? There is no issue in (3) as to the status of the SM since it is not a WH-phrase. (3) thus provides strong evidence for a DD strategy in L1 French.

We correlate the syntax of DD with the WH-parameter settings in French. PM without an overt SM is cross-linguistically attested, but only in languages where both full-movement and WH-in-situ coexist (Fanselow (2007)), just like adult in French. Bilingual and L2 acquisition nicely support this correlation: *PM without an overt SM* is spontaneously produced by Chinese-English bilingual children ((4a)), by Chinese Pidgin English speakers ((4b)), (Yip and Matthews (2007)); and by Japanese L2 learners of English ((4c), Wakabayashi and Okawara (2003)). Note that I° to C° raising, characteristic of English yes-no questions, is used in (4c) to signal matrix scope of *what*, just as in (3c), where ESK, characteristic of French yes-no questions, is used to signal matrix scope of *where*. French kids, Chinese-English bilingual kids, Japanese L2 learners of English, or Chinese Pidgin English speakers, have both WH-parameter settings in their target/input grammar(s): Don't move! Move! The syntax of DD in L1 French thus correlates with the WH-settings in the target grammar.

Consider now the syntax of the exceptional LD questions in (5) below, each containing two WHs. We take (5) to instantiate PM, on an ID analysis ((1iii)). The matrix WH is not an expletive SM as is the case with zero-Q°/ESK in (3), but the ordinary WH used to quantify over propositions (*quoi/KESK*). These LD questions thus contain two root WH-questions: one over propositions and one over individuals. Syntactically, CP2 is adjoined to CP1. Semantically, it restricts the possible answers to CP1 to those and only those propositions that are possible answers to the embedded

question. Both WHs can appear raised to Spec CP ((5a)) as in German, on the ID analysis ((1iii)), or in-situ ((5b)) as in Hindi, a WH-in-situ language.

(5) *Indirect Dependency scope-marking in L1 French*
a. [$_{CP1}$ [**KESK$_i$** tu penses **t$_i$**] [$_{CP2i}$ l'assiette, **où$_j$** elle est cachée **t$_j$**]]
'*What*-is-it-that you think, the plate, *where* she is hidden?'
b. [$_{CP1}$ [Tu crois **quoi$_i$**] [$_{CP2i}$ que je bois **quoi**]]
you believe *what* that I drink *what*

Strong evidence for ID in Hindi is provided by SM with embedded yes-no questions ((6a), Lahiri 2002). A DD analysis requires scoping out *yaa nahiiN* at LF to replace the expletive SM *kyaa* (itself raised to C(P) at LF). But matrix scope of 'whether' incorrectly predicts (6a) to have as answers either 'She said Ramaa went home.' or 'She didn't say Ramaa went home.', while the only appropriate answers for (6a) are 'She said Ramaa went home.' or 'She said Ramaa didn't go home.' In contrast, ID correctly predicts the scope of 'whether'. Now, L1 French also has SM with yes-no questions: the embedded yes-no question in (6b) restricts possible answers to the matrix question (*What do you think?*) to those propositions that are possible answers to the embedded yes-no question. (7a) illustrates SM with a yes-no question in Hindi on an alternative question reading: 'Which of coffee or tea, do you think Chandra drank?'. (7b), volunteered in lieu of the target LD *Who do you think pushed the trunk?* illustrates the alternative question reading ('Which of a spider or a ghost, do you think pushed the trunk?') of SM with yes-no questions in L1 French. The overt syntax of exceptional LD yes-no questions, on either a true yes-no or an alternative reading, thus provides compelling evidence for an ID strategy in L1 French.

(6) a. [$_{CP}$ Us-ne **kyaa$_i$** kahaa] [$_{CPi}$ kiramaa ghar gayii **yaa nahiiN**]
she-ERG *what* said that Ramaa home went *or not*
'What did she say (about) whether Ramaa went home?'
b. [**KESK$_i$** t'en penses][$_{CPi}$ **si** l'assiette, elle est cachéé dans le frigo]
what you of-it think *if* the plate, she is hidden in the fridge
'What do you think if the plate, she is hidden in the fridge?'

(7) a. Tum **kyaa** socte ho ki Chandrane coffee pii thii **yaa** chai?
you *what* think that Chandra coffee drank *or* tea
'What do you think whether Chandra drank coffee or tea?'
b. **KESK** tu penses **si**'l 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?'

3. On the semantics of *wh*-scope marking

Full-movement and PM are not semantically equivalent. While the LD question (1b) merely presupposes that George thinks Rosa kissed someone, the PM question (1a) also presupposes that Rosa kissed someone. In Herburger's (1994) words: "In (1a) [=our (1a)], the proposition expressed by the WH-clause, i.e. that Rosa kissed someone, cannot be understood as being merely part of George's belief-state but rather, as being part of the speaker's beliefs, that is, de re. In contrast, in (1b) [=our (1b) in German] it is possible to interpret the proposition that Rosa kissed someone de re. But is equally possible to interpreted it as a mere figment of George's imagination, that is, de dicto." Since full-movement and PM are semantically equivalent on a DD analysis ((1ii)), the DD cannot account for this difference. But the ID can: CP2 is outside the scope of the attitude verb, acting as a restriction on the matrix Q° *was* ((1iii)), the matrix question thus inherits the presupposition behind the embedded question—correctly predicting that (1a) will not be felicitous in a context where this presupposition is denied. That is, (1a) is infelicitous if the context makes it clear to the speaker that George's belief about Rosa is false. LD WH-in-situ patterns with full movement: (8b), with the appropriate intonation and stress on *qui*, is felicitous in the context provided which makes it clear that the presupposition behind the embedded clause (that someone will help us clean up) cannot be satisfied.

(8) a. Both you and I know that there is never anyone 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?'

(9) **Target LD**: What do you (Ratty) think is hidden in the box?
a. *We know there is a marble in the box, a bear under the blanket and we know 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 Ratty what he thinks.
b. *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. ...

Now, crucially, in the classic protocol for eliciting LD questions, *The guessing game* ((9)), Crain and Thornton 1988), the presupposition behind CP2 in the target LD question is *always* satisfied: the contexts designed in order to elicit the LD question in (9) make it clear that the proposition that something is hidden in the box must be part of the questioner's belief-state—that is, the child's beliefs. Could we correlate the appearance of ID strategies—be it in L1 French or L1 English (since (2), analyzed as a DD, could be reanalyzed as an ID, with a matrix argumental *what*)—with the semantics of LD-questions in the child grammar? If such a correlation were to be established, then it could provide an answer to a tantalizing question: why do English children go through a WH-scope marking stage, but a not a WH-in situ stage, when neither option is allowed in English?

4. Investigating the L1 felicity conditions for LD questions.

We now report the results of a study involving 14 monolingual children (3;04 to 6;03) and designed to elicit LD questions under the three conditions in (10). On session 1, five items were elicited per child under Cond-1. On session 2, we first have two items under Cond-2, then *revert to Cond-1* on the third item—as shown in (11) with our protocol translated from French. The last two items tested Conditions 2 and 3, respectively.

(10) *Target:* What do you (Leo) think Mummy bought for your b-day?
Condition 1: **Felicitous context for an adult SM structure**
Leo truthfully believes Mummy bought him a gift for his b-day.
Condition 2: **Infelicitous context for an adult SM structure**
Leo falsely believes Mummy bought him a gift for his birthday.
Condition 3: Mummy might or might not have bought Leo a gift for his birthday, but Leo believes that she did.

(11) a. **Cond-2: Infelicitous context for the use of SM**
Leo: It's my birthday. I'm sure Mom bought me a gift. I think I know what she bought. <Leo leaves. Mummy arrives. Opens big bag.>
Mummy: My god, it's Leo's birthday! It's 8! The stores are closed. I didn't have time to buy his b-day gift! <Mummy closes her bag.>
Exp.: You and I, we both know the bag is empty and Mummy didn't buy anything. But Leo doesn't know that. He's so sure she bought him something. Maybe he thinks she bought a plane. Ask him.
Target LD: What do you think Mummy bought you?

b. **Reverting to Cond-1: Felicitous context for SM**
Mummy: My little Leo, with one day late, here is your gift.
Exp.: Leo knows there is a gift in Mummy's bag. Lets see what he thinks she bought him. Maybe he thinks it's a plane. Ask him.
Target LD: What do you think Mummy bought you?

4.1. 'No questions' kids

Two children, the youngest age group (3;04, 4;01), never produced questions on all three conditions, systematically volunteering 'answers' instead of the target LD questions. (12) illustrates their response pattern.

(12)a. **Cond-1**. *Target:* What do you think the pirate is eating?
Camille: 'The pirate, he is eating an orange.'
b. **Cond-2**. *Target:* What do you think Mummy bought?
Camille: 'She has nothing in the basket.' Enzo: 'Nothing.'
c. **Cond-2**. *Target:* What do you think is hidden in the trunk?
Context: Leo's sister, Ann, has tricked him. He is scared as he falsely believes there is something hidden in the trunk.
Camille: 'A mouse.' Enzo: 'A joke.'

4.2. 'Amazing' kids

Table 1 gives the results for four kids aged 4;00 to 5;04, and (13), the typology of their responses in session 1. These kids produced **no** questions whatsoever under Cond-2/3, thus reverting to the pattern of responses for Group 1, volunteering answers ((14)). Crucially, the *only* question elicited from these kids in session 2 was a **Root2** question ((14c))—under **Cond-1** and only on the second prompt. We include a fifth child, Benoît (5;04), with a telling response pattern. In session 1, a 100 % of his responses were questions. In session 2, he patterned like the other kids for the first two items, volunteering again answers (e.g. 'She didn't buy anything.'). Now, for the third item, where we **revert to a felicitous** context for ID ((11b)), he first answered 'Maybe a plane', then on the second prompt, produced the target LD and, from then on, volunteered LD questions.

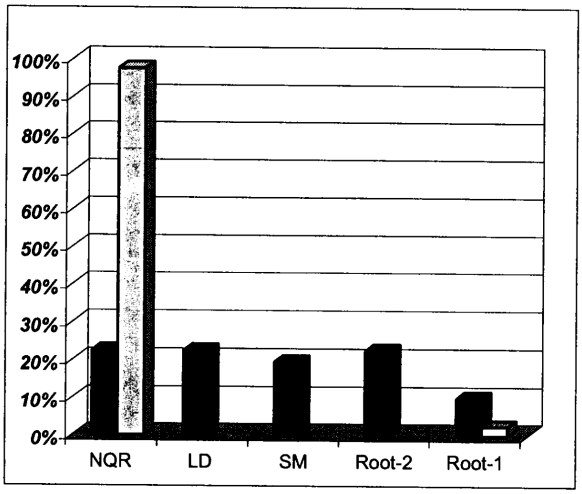

Table. 1. 'Amazing' kids: session 1 (in black) *vs.* session 2 (in white)

(13) *LD Movement/In-situ* **22,5%**
Scope-Marking **19,5%**
Root1 (Matrix V) *Q* **22,5%** e.g. 'You *think* what?'
Root2 (Embedded V) *Q* **10%** e.g. 'She *hid* what?
Non Question Response **22,5%** e.g. 'I don't feel like saying it.'

(14) *Target:* What do you think is hidden in the trunk? ((12c))
a. **Cond-2**: 'Maybe there is his big sister.', 'Maybe, mice.'
Target: What do you think Mummy bought you? ((11a-b))
b. **Cond-2**: 'Nothing.' 'Me too, I wonder, maybe a plane?'
c. **Cond-1**: We don't know what she bought.' *1rst prompt*
'What-is-it that she bought? *2nd prompt*

4.3. 'Perfect' kids

This group of five children is the oldest age group (5;03 to 6; 03). As shown in Table 2, their performance on LD questions *jumps* from **55 %** under Cond-1, to **86 %** under Cond-2/3. Why is their performance significantly better? Because Cond-2/3 provide a more felicitous context for asking a LD question. Recall that under Cond-1, the lead in is—e.g. *We know there is cat hidden in the trunk, ask Ratty what he thinks.* ((9)). Now, in this context, it would be just as appropriate to ask Ratty either the

Root2 question *What is hidden in the trunk?*, or the target **LD**-question *What do you think is hidden in the trunk?*. In contrast, under Cond-2/3, the context makes it clear to the child/questioner that the presupposition behind CP2 in the target LD-question (that there is something hidden in the trunk) is/might be false. Cond-2/3 thus provide contexts felicitous for a LD question, but infelicitous for either a Root2 question or a SM question on the ID analysis, since both presuppose something is hidden in the trunk.

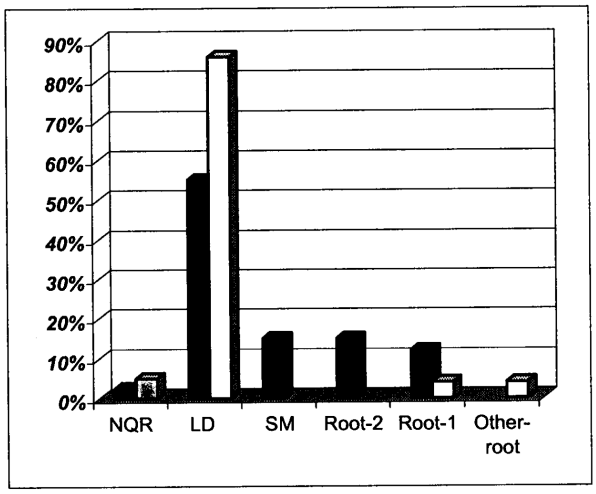

Table. 2. 'Perfect' kids: Cond-1 (in black) vs. Cond-2/3 (in white)

4.4. 'Direct Dependency' kids

This group includes two children (4;10, 5;04), volunteering DD questions on all conditions. On a DD analysis, PM in (15a) has the syntax of (is equivalent to) long-movement at LF and is thus expected to be felicitous on all conditions, just as full-movement is. What is surprising, however, is that the DD is their primary LD strategy, representing 76% of their responses. Recall that DD without an overt SM is licensed only in grammars where both WH-movement and WH-in-situ coexist (e.g. (4) bilingual Chinese/English, Chinese Pidgin English). We take DD in L1 French to reflect, in fact, an adult strategy in non-standard French. That is, we analyze (15a) as a truncated embedded WH-cleft ((15a')), parallel to the WH-cleft in (15b) volunteered by a control adult. Now, (truncated)

embedded *wh*-clefts ((15)) raise the canonical issue that PM raises—how to assign matrix scope to the medial WH. The DD analysis resolves this issue by positing a matrix SM replaced at LF by the medial WH. On this proposal, the DD strategy is productive in L1 French because it reflects a SM option in non-standard French, itself a WH-scope marking language.

(15) a. Tu penses que **quoi** a acheté, Anne?
a'. [$_{CP1}$ **Q$_i$** [you think [$_{CP2}$ that [~~**it-is**~~ [**what$_i$** has bought Ann
b. Tu penses que c'est **qui** qui joue du tambour?
'You think that it-is who that is playing drums?'

5. On the L1 felicity conditions for LD questions

The results for the 'Amazing' kids (4-5;04) vs. the 'Perfect' kids (5;03-6;03), suggest that the former have not yet acquired the felicity conditions for LD questions. Their response-pattern in session 2 ((14a-b)) was the same as those of the younger kids (3;04, 4;01) who failed to produce questions altogether, volunteering answers instead ((12)). Three kids produced **no questions whatever the experimental condition**. One child produced a single **Root2** question under **Cond-1** ((14c)). And Benoît only started volunteering LD questions, once we reverted to the context for **Cond-1**, and only on the second prompt. We conclude that these 'Amazing' kids have not yet mastered the semantics of LD movement/WH-in-situ since they fail to produce questions in contexts where *only* a LD question is felicitous. They appear to have the felicity conditions for SM questions on an ID analysis. We thus take their response-pattern under Cond-2/3 to reflect *presupposition failure*. The child fails to produce the target LD because the presupposition behind the embedded clause—e.g. that Mummy bought something—cannot be satisfied, projected up to the matrix clause, since it has been explicitly denied in the context provided.

We started out by asking whether the appearance of ID strategies in child grammars could be correlated with the semantics of LD questions in their grammar, hypothesizing that such a correlation could explain why English kids go through a SM, but not an in-situ, stage, when neither is allowed in English. Our results suggest that children do indeed go through a stage where they have the semantics of SM questions in adult Hindi/German. The paradox, however, is that although the response pattern for the Amazing kids on **session 2** show they have not yet mastered the *semantics* of LD questions, they appear nonetheless to have the *syntax* of LD extraction/WH-in-situ since they *do produce* LD questions in **session 1** ((13)). Their response patterns thus suggest 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. Conversely, the response patterns on Cond-2/3 for the 'perfect' kids, suggests that children that *have acquired the semantics* of LD-questions have acquired their syntax, since their performance on LD questions improves significantly under Cond-2/3. These findings suggest a lag in the acquisition of the semantics vs. the syntax of LD questions/subordination. Assuming a tight match between syntactic and semantic structure—that the semantics is read off LF, the ultimate level of representation built by syntax—this conclusion raises the issue of the syntax-semantics mapping in language development.

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