

# An Information-Structural Account of Children’s Wh-In Situ Questions in French

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## 1. Introduction

It is well known that many languages either require or prohibit overt wh-movement in main clause information-seeking wh-questions. For example, English requires overt movement of the wh-phrase, as in (1), while Mandarin Chinese disallows it, as in (2).

- (1) a. What did John buy?  
b. \*John bought what?
- (2) a. Lisi mai-le sheme (ne)  
Lisi buy-ASP what (Q)  
“What did Lisi buy?”  
b. \*Sheme Lisi mai-le (ne)  
what Lisi buy-ASP (Q)  
 (“What did Lisi buy?”)

We must emphasize that this restriction holds for information-seeking questions, i.e. those that are genuine requests for information, as opposed to echo-questions, which may indicate surprise or incredulity, and permit alternative word orders. In English, as is well known, wh-echo-questions permit the wh-word to remain in situ (*John bought WHAT?*) (Culicover 1976, i.a.), whereas in Mandarin a fronted wh-word has a similar effect (De Villiers 1995). The focus of our study is French, in which both fronted and in situ forms of wh-questions can be used for information-seeking questions. Thus, both (3a) and (3b) are grammatical in colloquial French, and (3b) does not require the special discourse context normally needed for echo questions.<sup>1</sup>

- (3) a. Qu’est-ce que tu as vu?  
what-is-it that you have seen  
“What did you see?”  
b. Tu as vu quoi?  
you have seen what  
“What did you see?”

An exception to this is *pourquoi* ‘why’, which does not allow such variation. When it is found in a fronted position (as in 4a), it is functioning as the “reason” *pourquoi*, whereas if it is found in an in situ position, the meaning of this wh-word actually changes and it becomes the purposive *pourquoi* (4b).

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<sup>1</sup> We follow Hulk (1996) in considering the periphrastic form *qu’est-ce que* in (3a) to involve an unanalyzed KESK question morpheme (based on Rooryck’s (1994) analysis of *est-ce que* as an unanalyzed Q morpheme, represented by Hulk and others as ESK).

- (4) a. Pourquoi il part?  
       why       he leaves  
       “Why is he leaving?”
- b. Il part     pourquoi?  
       he leaves for-what-purpose  
       “He is leaving for what purpose?”

French also permits additional forms of wh-questions, namely wh-questions with or without subject-verb inversion (*Comment tu as/as-tu fait ça?* ‘How did you do that?’). However, previous research on wh-questions in French has found that children rarely produce inverted forms (cf. Hamann 2006, Gotowski 2014). Thus, for the remainder of this paper we will disregard the issue of inversion and will instead focus only on the issue of the position of the wh-phrase.

It is important to note that while both fronted wh-questions and wh-in situ questions are grammatical as information-seeking questions, there are nevertheless pragmatic differences between them, such that there are discourse contexts in which only one of the forms is licensed. For example, Chang (1997) has argued that wh-in situ is strongly presuppositional, so that it can be used only in cases where the referent of the wh-phrase is presupposed (see also Cheng & Rooryck 2000). In addition, there are prosodic differences between these question forms (Cheng & Rooryck 2000, Depréz et al. 2013). We will return to both of these issues later in the paper.

Previous work on children’s wh-questions has found that children produce more in-situ forms (3b) than French-speaking adults do, and this observation is the focus of this paper. Hamann (2006) and Zuckerman & Hulk (2001) account for the asymmetry in production of in-situ forms in terms of Economy (Chomsky 1995). Specifically, they argue that wh-in situ forms are “more economical” than fronted wh-questions because of the lack of overt movement. In this paper, we present new data which supports the observation that French children produce more wh-in situ questions than their caregivers do. However, we propose an alternative analysis that revolves around the specific discourse properties of wh-in situ vs. fronted wh-phrases.

Our paper is structured as follows. In section 2 we present data on the production of wh-in situ in child French and French child-directed speech, focusing specifically on *qu’est-ce que/quoi* ‘what’, the most frequent wh-question type in French child-directed speech (see Table 3 below). Following that we point out some shortcomings of the account based on Economy. Section 3 turns to the discourse properties of wh-in situ questions, and we present Mathieu’s (2004) analysis of wh-in situ phrases in French as “lower order topics.” We posit that differences in rates of wh-in situ in child vs. adult French are due to children’s difficulties with mastering the discourse conditions under which a syntactic mechanism (overt movement) is required for foregrounding a referent. In section 4, we show that children preferentially produce in-situ forms *only* when their target language permits these forms as information-seeking questions. That is, these forms are grammatically sanctioned in French, but not in English, where they can only be echo questions, as we noted above. Thus, we explain the stark asymmetry between French- and English-speaking children in their rates of producing wh-in situ questions in terms of grammatical differences between the two target languages. Finally, in section 5 we conclude by outlining how this research will be extended in a planned follow-up experiment.

## 2. French-speaking Children’s Use of Wh-in Situ

As mentioned in section 1, it has been observed that French-speaking children produce an unusually high rate of wh-in situ constructions. Two of the studies that have highlighted this observation are a corpus based study by Hamann (2006), and an elicitation study by Zuckerman & Hulk (2001; henceforth Z&H). Let us briefly review the findings of these studies. We note that these studies report only children’s rates of wh-in situ and fronted wh-questions, but do not report numbers in (naturalistic) caregiver speech in the input. Hulk (1996) cites an estimate from AI (1976) that 33% of wh-questions in colloquial French (*français familier*) are wh-in situ questions, 46% involve fronting without inversion (e.g. *Comment tu as fait ça?* ‘How did you do that?’) and only 3% involve fronting with inversion (*Comment as-tu fait ça?*).

## 2.1. Previous Research

Hamann (2006) analyzed data from three children in the Geneva corpus (Hamann et al. 2003): Augustin, Louis, and Marie (1;8-2;9). Looking at all forms of *wh*-phrases (i.e. *qui* ‘who’, *qu’est-ce que/quoi* ‘what’, *où* ‘where’, etc.), she found that children overwhelmingly produced in situ forms, as seen in Table 1. Note that “fronted *wh*” consists primarily of *wh*+ESK (including *qu’est-ce que*, or KESK), as well as fronted forms without inversion or ESK, such as *Où il est?* (lit. where he is?).

Table 1. Rates of Fronted-Wh and Wh-In-Situ Questions (Hamann 2006)

	Fronted Wh	Wh-In-Situ
Augustin (2;0-2;9)	9.3%	90.7%
Louis (1;9-2;3)	26.7%	73.3%
Marie (1;8-2;3)	23.9%	76.1%

Hamann accounts for children’s high rate of producing in-situ forms by appealing to the notion of Economy. Specifically, she suggests that “covert movement is less costly than overt movement” (p. 145), such that children will choose to project the less complex in situ structure rather than the more complex fronted structure. Hamann also suggests that children’s input may be important in not only causing French-speaking children to produce in situ forms at all (recall that *wh*-in situ is grammatical in adult French), but it may also be important in motivating children to produce fewer in situ forms as they develop, as such forms are less common in adult speech than in children’s speech, if AI’s (1976) estimate of 33% is correct. In other words, the fact that these forms occur at all in the input leads children to produce them, but then over time children scale back their production of these forms to ultimately match rates in the target language.

Zuckerman & Hulk (2001) conducted an elicitation study that looked at older children’s (ages 4;0-5;9) and adults’ production of both fronted *wh*-questions and *wh*-in situ forms. Participants were introduced to a “shy” puppet and were given an embedded question, which participants were then supposed to pose as a matrix question to the puppet. For example, they were given the input in (5), based on which they might ask the puppet one of the questions in (6).

- (5) Je veux savoir où il est allé.  
I want know-inf where he is gone  
“I want to know where he went.”
- (6) a. Où est-il allé? (fronting with inversion)  
b. Où est-ce qu’il est allé? (wh+ESK)  
c. Où il est allé? (fronting without inversion)  
d. Il est allé où? (in situ)

Z&H tested seven *wh*-phrases: *que* (*que* + ESK, i.e. *qu’est-ce que*, vs. *quoi*) ‘what’, *où* ‘where’, *comment* ‘how’, *quel* ‘which’, *pourquoi* ‘why’, *quand* ‘when’ and *combien* ‘how many’. Combining all *wh*-phrase types, Z&H found that children produced *wh*-in situ 3% of the time, compared to 1% for adults. While both rates are low, the contrast in rates is still statistically significant ( $p < 0.05$ ). Moreover, children’s rate of in-situ production for *quoi* ‘what’ is much higher, 18%, compared to the adults’ rate of 3%.

Table 2. Rates of Fronted Wh-Questions and Wh-In Situ Questions (Z&H 2001)

	Wh-fronted (all)	Wh-in situ (all)	Wh-fronted (qu’est-ce que)	Wh-in situ (quoi)
Children (4-5;9)	97%	3%	82%	18%
Adults	99%	1%	97%	3%

Like Hamann, Z&H argue that these older children are still influenced by Economy. Specifically, they argue that children are not aware of pragmatic or stylistic differences between the different types

of wh-questions, and that in the absence of pragmatic constraints leading to the production of fronted forms, children will produce the more economical in situ forms.

## 2.2. New Data

Our research is based upon data from the Palasis corpus (Palasis 2010) in the CHILDES database (MacWhinney 2000). This corpus contains spontaneous speech from native French-speaking children in a preschool class in the south of France, and the speech of the adult teacher who interacts with them. We analyzed all files of this corpus with a transcript (112), which include 22 children, ages 2;5-3;10 (however, two children were excluded from this analysis because they are not native French speakers). Thus, our data complement the existing data in terms of children's ages, providing a continuum of wh-in situ production in child French from 1;8 to 5;9.

First we established the relative rates of production of different wh-phrases in child-directed speech (CDS) in the French data, as well as in English CDS for comparison (we will return to the English corpus in section 4). As seen in Table 3, wh-phrases meaning 'what' are by far the most common type in CDS.

Table 3. Raw Counts of Fronted Wh-Words in French and English CDS

Wh-Word	French (Palasis 2010)	English (Brown 1973; Eve files 1-20)
<i>KESK</i> / what	1379	1056
<i>qui</i> / who <sup>2</sup>	79	70
<i>où</i> / where	66	252
<i>quand</i> / when	0	2
<i>comment</i> / how	156	42
<i>combien</i> / how many	3	44

Limiting our search to questions with *qu'est-ce que/quoi* 'what', we then examined the children's spontaneous utterances for their productions of questions containing these forms. Object wh-questions with a subject and verb were included. Wh-questions with a dropped expletive (7) were also included, as null expletive subjects are common in French (cf. Culbertson & Legendre 2014); bare wh-questions (8) and those lacking a subject (9-10) were excluded. Only wh-in situ questions with *quoi* were included; other forms such as *de quoi* or *avec quoi* were not included, as the corresponding fronted forms of these wh-phrases are not *qu'est-ce que*.

- (7) Y            a quoi?  
 there-exp. has what  
 "What's there?"
- (8) Quoi?  
 what  
 "What?"
- (9) Fais quoi?  
 does what  
 "What are (you) doing?"
- (10) Qu'est-ce que faire?  
 KESK            do-INF  
 "What are (you) doing?"

Confirming the impression of a child-adult asymmetry in wh-in situ production, as expressed in the prior literature, the results show that the children from the Palasis corpus produce significantly more wh-in situ questions than the adult in this corpus.

<sup>2</sup> Only object wh-phrases for *quoi* and *qui* were counted here. Occurrences of *Qui est-ce qui/que* 'Who is it that...' are not included here.

Table 4. Production of *Qu'est-ce que* vs. *Quoi* (Palasis 2010)

	Fronted Wh	Wh-In Situ
Children (2;5-3;10)	18.5% (40)	81.5% (176)
Adult	86.8% (1379)	13.2% (210)

Compared to the 13.2% rate from the adult in the Palasis data, and the 33% rate reported by AI (1976), we find that children's rates of in situ, while dropping over time, are still higher than in adult French until around age 4.

Table 5. Rates of Wh-In Situ for *Qu'est-ce que/Quoi*

Corpus/Study	Children's Ages	Child Rate of In-Situ	Adult Rate of Wh-In Situ
Geneva	(1;8-2;9)	80%*	n/a
Palasis	(2;9-3;10)	81.5%	13.2%
Z&H (2001)	(4;0-5;9)	18%	3%
AI (1976)	n/a	n/a	33%*

\*includes other types of wh-phrases

Z&H's rates are lower for both children and adults than any of the other studies. We surmise that their elicitation methodology may have yielded more fronted constructions than speakers would normally produce in naturalistic speech. This could be because an embedded question (*I want to know where he went*) creates a pragmatic domain in which an in situ question would be infelicitous. We will return to the pragmatic conditions that distinguish fronted from in situ wh-questions in section 3.

First, however, we discuss some weaknesses in the claim that Economy is the reason for children's greater production of wh-in situ compared to adults.

### 2.3. Weaknesses of the Economy Account

One weakness of the Economy explanation comes from Crisma's (1992) study of Philippe's data from the Leveillé corpus (Suppes, et al. 1973). She found that Philippe did not produce any instances of wh-in situ until after age 2;6, and instead produced fronted wh-questions exclusively before that point. Hamann (2006) explains this finding by attributing Philippe's early production of fronted wh-questions to the input that he receives. That is, Philippe's parents reportedly did not use wh-in situ questions in their speech. However, the children in the Palasis corpus hear fronted wh-questions with *qu'est-ce que* almost 85% of the time, and yet they produce them only about 12% of the time in their own speech. Furthermore, as we will show later with data from English CDS, input rates of wh-in situ are not directly related to children's own rates of in situ production.

Secondly, European Portuguese (EP), like French, allows both fronted wh-questions and wh-in situ. Soares (2004) conducted a corpus study with data from three children (Marta 1;2-2;2, Sandra 2;6-3;5, Carlota 3;6-4;5) acquiring EP. These children did not produce any instances of wh-in situ early on, and in fact all of the questions produced by Marta, the youngest child, are fronted wh-questions. Thus, cross-linguistically, children do not seem to have a strong preference for wh-in situ at the earliest stages of question production, even when in situ is an option.

Lastly, we argue that an Economy-based analysis that claims that children avoid movement by producing wh-in situ (cf. Hamann 2006) is problematic on theoretical grounds as both fronted and in situ wh-questions involve movement of the wh-operator. The difference between these two forms is the level of representation at which this operator movement occurs: in fronted wh-questions the movement happens in the overt syntax, while in wh-in situ questions the movement is covert (Aoun et al. 1981, Huang, 1982, i.a.). Thus, in either case, children are not *avoiding* movement simply by producing wh-in situ. While Hamann (2006) explicitly states that covert movement is more economical than overt movement, we are unaware of any strong evidence for this distinction. Instead, we will offer an alternative explanation that focuses on particular discourse-related differences between fronted and in situ forms in French.

### 3. Properties of French wh-in situ

#### 3.1. Mathieu's account

As we noted above, there are pragmatic differences between fronted and in situ wh-questions in French. One well known proposal is Chang's (1997) claim that wh-in situ questions are associated with a strongly presuppositional context. One piece of evidence cited in favor of this analysis is that while a fronted wh-question (11a) can be answered as in (11b), the wh-in situ question in (12a) reportedly disallows the same answer. Thus, the question in (12a) is presuppositional in the sense that it presupposes that something was read.

- (11)a. Qu'est-ce que tu as lu t?  
KESK that you have read  
"What did you read?"  
b. Rien.  
"Nothing."  
(12)a. Tu as lu quoi?  
you have read what  
"What did you read?"  
b. \*Rien.

Mathieu (2004), however, argues that there are varieties of spoken French in which the answer in (11b/12b) is perfectly acceptable as an answer to (12a), and that wh-in situ questions are not presuppositional in a different way than fronted wh-questions are. Instead of distinguishing wh-in situ from fronted wh-questions in terms of presupposition, Mathieu argues that wh-in situ constructions involve a type of "split DP," unlike fronted wh-questions. An example of an overt split DP is given in (13a); (13b) shows the non-split version.

- (13)a. Combien<sub>i</sub> as-tu lu t<sub>i</sub> de livres?  
how-many have-you read of books  
b. Combien de livres<sub>i</sub> as-tu lus t<sub>i</sub>?  
how-many of books have-you read  
"How many books have you read?" [Mathieu 2004, ex. 7]

In a wh-in situ question, the wh-operator is "split" from its nominal.

- (14) [Op<sub>i</sub> [Tu as lu quoi<sub>i</sub> ]]

Part of the rationale for analyzing wh-in situ phrases as split DPs comes from the fact that both types of DPs display similar syntactic restrictions. For example, wh-in situ questions, unlike fronted wh-questions, are not possible with negation (15) or within an embedded clause (16) (though see Oiry 2011 for claims that wh-in situ is permitted in embedded contexts in colloquial French).

- (15)a. \*Il ne voit pas qui?  
he ne sees neg who  
("Who does he not see?")  
b. Qui<sub>i</sub> est-ce qu'il ne voit pas t<sub>i</sub>?  
who is-it that-he ne sees neg  
"Who does he not see?" [Mathieu 2004, ex. 4]  
(16)a. \*Il a dit que qui avait eternué?  
he has said that who have-subj sneezed  
("Who did he say sneezed?")  
b. Qui est-ce qu'il a dit qui t avait eternué?  
who is-it that-he has said who have-subj sneezed  
"Who did he say sneezed?" [Mathieu 2004, ex. 67]

Likewise, split-DP constructions are not possible in these contexts, as we illustrate with negation (see 17):<sup>3</sup>

- (17) a. \*Combien<sub>i</sub> n’as-tu pas lu t<sub>i</sub> de livres?  
 how-many ne-have-you neg read of books  
 (“How many books haven’t you read?”)  
 b. Combien de livres<sub>i</sub> n’as-tu pas lus t<sub>i</sub>?  
 how-many of books ne-have-you neg read  
 “How many books haven’t you read?”  
 c. \*Il ne voit pas qui? (=15a)

The reason this connection is important is that Mathieu gives evidence that split DPs introduce discourse referents that are a special kind of Topic. More specifically, he argues that wh-in situ phrases constitute “new topics” (Aissen 1992). New topics are similar to lower-order topics in that they involve a backgrounded, or “non-prominent” referent. Fronted wh-phrases, in contrast, are canonically associated with Focus, which implies a foregrounded referent.

Building upon this analysis of French wh-in situ questions, we argue that the reason children overproduce these constructions compared to adults stems from children’s difficulties using particular syntactic mechanisms to correctly distinguish the discourse status of different referents. Previous research has shown that children at the age we are investigating are capable of distinguishing between Topic and Focus (de Cat 2009, 2011), and they understand the difference between given and new information (Hickmann 2003). However, many researchers have noted children’s consistent errors in overattributing referents to the common ground (e.g. Schaeffer & Matthewson 2005). How does this relate to fronted vs. in situ wh-phrases? In fronted wh-questions, the wh-phrase is a Focus element: it is foregrounded, since it is not yet part of the common ground. Conversely, a wh-in situ phrase is backgrounded material that is already in the common ground. But if children believe that the wh-phrase is already inherently salient enough in the discourse so that foregrounding of the nominal is not necessary, they may produce more in situ wh-phrases. In other words, children may believe that saliency does not need to be grammatically encoded via a linguistic mechanism, specifically through overt movement.

This explanation would coincide with research that has indicated that children often think that any particular referent is salient in the discourse, and that what is salient to them is salient to others (Wexler 1998; de Cat 2009). De Cat’s (2009) experimental work has demonstrated that children seem to “[exploit] joint attention” in conversation. As de Cat (2009: 236) explains, children “bank on what is visible to them and their addressee to reduce the amount of information [that is] encoded linguistically.”

We predict, therefore, that children will produce wh-in situ questions regardless of the discourse context, but that adults will make a distinction as to when to use in situ forms based on what is in the common ground. The following examples are taken from the Palasis corpus. In (18) the adult (KAT) produces a fronted wh-question when first referencing the action that the referent *le renard* ‘the fox’ is engaged in; it is the event (eating) that is being placed in a focus position to bring it into the common ground. After the event has been successfully introduced into the common ground, KAT is then able to produce an in situ question to ask about what the fox is eating, or to actions related to this event (LSN is a child).

- (18) KAT: **Qu’est ce-qu’** il fait le renard?  
 KESK he does the fox  
 “What is the fox doing?”  
 LSN: Le renard il mange.  
 the fox he eats  
 “The fox is eating.”

<sup>3</sup> Returning to Z&H’s (2001) study for a moment, note that they elicited wh-questions by posing an embedded question (*Je veux savoir...* ‘I want to know...’) which does not permit wh-in situ. Thus, they may have elicited so few wh-in situ questions, relative to what is found in spontaneous speech, because participants were primed with a construction that disallows in situ questions, pace Oiry (2011).

KAT: Oui il mange **quoi**?  
 yes he eats what  
 “Yes, he is eating what?”

Children, on the other hand, might not be making the same kind of distinction. For example, in the exchange in (19) the adult is producing a fronted wh-question, while the child (LSN) is producing in situ in the same context:

- (19) KAT : Tu lui demandes si i(l) sait ce que c'est.  
 you him ask if he knows that that-is  
 “Ask him if he knows what it is.”  
 LSN : **C'est quoi ça ?**  
 that-is what that  
 “What is that?” (Lit. That is what that?)  
 MAS : Euh je sais pas. C'est à moi.  
 uh I know neg that-is to me  
 “I don't know. It's mine.”  
 KAT : Est-ce que tu sais ce que c'est Enzo ?  
 Q you know that that-is Enzo ?  
 “Do you know what it is Enzo?”  
 MAS : Euh ça c'est à moi ça.  
 uh that that-is to me that  
 “Uh that's mine, that.”  
 KAT : Et **qu'est-ce que c'est ?**  
 and KESK that-is  
 “And what is it?”

Therefore, children seem to produce wh-in situ questions in discourse contexts where adults would require (or at least strongly prefer) a fronted wh-phrase, because children permit a wider common ground in the discourse than adults, relying on joint attention. As a result, they permit more backgrounded referents. We hope to test this conjecture experimentally in the future (see section 5).

#### 4. Comparison of Child English and Child French

Next we compare child French with child English. First, we note that the rate of wh-in situ in CDS is quite similar between the two languages. The adults in Eve's data (files 1-20; Brown 1973) produced wh-in situ questions 16% of the time across all files. In Adam's data (files 1-19) the adults produce wh-in situ questions 22% of the time. Recall that the rate in the Palasis corpus is 13.2%.

Table 6. Input to Children: *what/quoi*

Language/Source	N matrix obj <i>what</i> -Q	N in situ <i>what</i> -Q	% in situ
English (Eve)	1056	201	<b>16.0%</b>
English (Adam)	911	257	<b>22.0%</b>
French	1379	210	<b>13.2%</b>

It is important to note that in all of the English cases, wh-in situ questions are functioning as echo questions, specifically to request a repetition or clarification. We return to the issue of echo questions in more detail below. For example, in the exchange in (20), Eve uses the pronoun *it* without a clear referent, so her mother's question is asking for clarification:

- (20) MOT: No more celery?  
 MOT: Alright.  
 CHI: Man have it.  
 MOT: Man have what?

[Eve 01]



However, Eve's own production of non-imitative *wh-in situ* occurred in only 0.4% of her *wh*-questions (N=1), and Adam's is similarly low (0.1%, also N=1). Recall that French-speaking children produce *in situ* forms over 81% of the time.

Table 7: Children's *in situ* Output

Language	Corpus	In Situ (Adult Input)	In Situ (Child Output)
English	Brown (Eve 1-20)	16.0%	0.4%
English	Brown (Adam 1-19)	22.0%	0.1%
French	Palasis	13.2%	81.5%

Previous work on English-speaking children's development of *wh*-questions has shown that children are sensitive to the pragmatic difference between echo and non-echo questions (Takahashi 1991), and they know that *wh-in situ* is not a grammatically licensed option for information-seeking questions. For example, in Takahashi's experiment, 3- and 4-year-old children were presented with a picture of different animals (horse, giraffe, elephant) eating different kinds of food (carrot, tree leaves, banana), and were then given a statement employing the superordinate category of the depicted entities: *The animals are eating food*. Children were then asked either *What are the animals eating?*, an information-seeking question for which an appropriate answer would be the basic level/subordinate labels (carrot, etc.), or *The animals are eating what?*, an echo question for which an appropriate answer would be a repetition of the superordinate label (food). The result was that when children were asked the non-echo question, only 38% of their answers were repetition of the superordinate label (food), but when asked the echo question, fully 95% of their responses were of this type.

The result of our corpus search of Eve and Adam's data makes two important points: one is that input rates of *wh-in situ* are not transparently related to children's own rates of producing *wh-in situ* forms, as we find quite similar rates of input in both French and English CDS, but widely divergent rates of children's output in the two languages. The second is that children know early on whether their language permits *wh-in situ* questions or not, and they overproduce them *only* if their language licenses these questions as a grammatical option. This raises the interesting question of *how* children determine whether *wh-in situ* questions in their target language are echo questions or information-seeking questions. We submit that one potential cue comes from the fact that while *what* in information-seeking questions can only replace a DP (see (21)), in echo-questions it can be any category (see (22)).

- (21) a. \*What did you buy a?  
 b. \*What did you see a very house?  
 c. \*What did you?
- (22) a. You bought a what? (NP)  
 b. You saw a very what house? (AP)  
 c. You what? (VP)

In fact, when we examine the input to English-speaking children about 50% of adults' *wh-in situ* questions involve *what* replacing a non-DP. In Eve's input the rate is 39%, and in Adam's input it is 55%. Examples of adult *wh-in situ* questions in which *what* replaces a category other than DP are given in (23).

- (23) a. Eve's what kind? (AP; eve02)  
 b. The tap what? (VP; eve08)  
 c. Because what? (IP; eve13)  
 d. Big what? (N; adam10)  
 e. All around the what? (NP; eve19)  
 f. Cock-a-doodle fresh what? (unclear; adam09)

A further question that is begged is how French-speaking children tell the difference between *wh-in situ* echo questions, and *wh-in situ* information-seeking questions. Echo questions appear to be less frequent in child-directed French, based on the speech in the Palasis corpus. In particular, there were only 25 cases of clear echo questions, in which it could be gathered from context that the adult was

asking for clarification or for the child to repeat what she had said (as in the exchange in (24)) (these are not included in the counts in Tables 4, 5 or 6), and 14 cases of *quoi* replacing a non-DP (as in (25)).

- (24) MAT : Victor c'est un oiseau.  
           Victor this-is a bird  
           "Victor is a bird."  
       KAT : C'est quoi Victor ?  
           this-is what Victor  
           "Victor is a what ?"  
       MAT : Un oiseau.  
           a bird  
           "A bird."

- (25) Parce que quoi?  
       "Because what?"

Thus, it may be that if non-DP wh-in situ questions are extremely rare, then the child can assume that wh-in situ is warranted as a grammatical, information-seeking form, but if non-DP wh-in situ questions make up a large proportion of wh-in situ questions, then children can infer that wh-in situ are echo questions only. This conjecture remains to be tested with other languages.

## 5. Conclusions and Further Directions

Using corpus data, we reported that until about age 4, children acquiring French use much higher rates of wh-in situ than French-speaking adults do, but we argued against Economy as the primary explanation for this asymmetry. Instead, following Mathieu's analysis of French wh-in situ phrases as backgrounded referents, we linked their overproduction of these forms to children's known overattribution of referents to the common ground. Because of this overattribution there are more cases in which a referent or event can be asked about using a wh-in situ form, as compared to adult speech. Crucially, we also eliminated input rates in CDS as a direct cause of French-speaking children's high rates of wh-in situ forms.

By way of concluding, let us outline how we plan to extend this work. First, since our data come exclusively from corpora, we hope to verify our analysis using an experimental task eliciting wh-questions from French-speaking children. The goal of this elicitation task is to control for discourse conditions that could influence wh-in situ production, namely what is or is not in the common ground. We plan to design the experiment so that the children (3;0-6;0) are presented with short videos with two animals, one of which is performing some action (e.g. jumping). Children will then be prompted to ask a puppet a question about the video. The form of the prompt that they are given will correspond to one of two conditions, based on whether or not one of the animals has been backgrounded in the discourse, i.e. placed in the common ground. The scenario in (26) is an example of a prompt with a backgrounded NP (*un chiot* 'a puppy') and (27) is a prompt with no backgrounded NP.

- (26) Il y a deux animaux. Je peux entendre un chiot. L'animal fait quelque chose, mais je sais pas quoi.  
       Demande à la poupée ce qu'il fait.

"There are two animals. I can hear a puppy. The animal is doing something, but I don't know what. Ask the puppet what he is doing."

- (27) Il y a deux animaux. Un animal fait quelque chose, mais je sais pas quoi. Demande à la poupée ce qu'il fait.

"There are two animals. One animal is doing something, but I don't know what. Ask the puppet what he is doing."

(28) Possible responses:

- (a) Qu'est-ce qu'il fait?/Qu'est-ce qu'il fait, l'animal? (fronted wh-question)  
 (b) Il fait quoi?/L'animal fait quoi? (in situ)

We predict that if children are sensitive to the information structure of the different types of wh-questions, and if they restrict fronted wh-questions to cases where the referent has not previously been introduced into the discourse, then children should ask question (a) in scenario (27). Moreover, children should preferentially produce question (b) (in situ) in scenario (26), where the referent is overtly backgrounded. However, if children are over-attributing referents into the common ground, and thus not making a distinction based on whether or not the NP has been backgrounded, we predict that they will produce (b) (in situ) in both conditions; crucially, we predict that they will produce more in situ than adults in scenario (27).

In addition, we will collect adult speakers' judgments about the acceptability (or "naturalness") of producing wh-in situ and fronted wh-questions, with and without the referent of the wh-phrase being in the common ground. In contrast to French-speaking children, we predict that adults will only produce a wh-in situ question if the referent is overtly backgrounded (scenario (26)). Finally, we predict that children will produce in situ questions more often than adults in both conditions.

Table 8: Predicted Responses in Elicitation Task

	Children	Adults
NP introduced (26)	wh-in situ > fronted	fronted > wh-in situ
NP not introduced (27)	wh-in situ > fronted	fronted only

The results of this experiment are forthcoming.

Lastly, there may be important links between the production of wh-in situ questions and prosody. Richards (2006) has linked prosodic features of languages to their licensing of wh-movement, wh-in situ, or both, and recent work by Déprez, Syrett and Kawahara (2013) has revealed a specific pattern of pitch compression in adult French wh-in situ questions. An open question is whether French children have the same pattern of pitch compression when producing wh-in situ. We hope to explore children's prosodic features of wh-questions in the future.

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# Proceedings of the 6th Conference on Generative Approaches to Language Acquisition North America (GALANA 2015)

edited by Laurel Perkins, Rachel Dudley,  
Juliana Gerard, and Kasia Hitczenko

Cascadilla Proceedings Project Somerville, MA 2016

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to Language Acquisition North America (GALANA 2015)  
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Gotowski, Megan and Misha Becker. 2016. An Information-Structural Account of Children's Wh-In Situ Questions in French. In *Proceedings of the 6th Conference on Generative Approaches to Language Acquisition North America (GALANA 2015)*, ed. Laurel Perkins et al., 24-35. Somerville, MA: Cascadilla Proceedings Project. [www.lingref.com](http://www.lingref.com), document #3203.