Why Continuity

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Cross-linguistic research on the syntax of *why* (Ko 2005, Rizzi 1997; 1999) has paved the way for a new explanation of the observation that children's *why*-questions often lag in showing inversion long after other wh-questions. The present paper pursues a parametric explanation, proposing that children who fail to invert *why*-questions have mis-set a *why* parameter to the 'Italian' value. Thus, the cluster of properties seen in questions with *perché* in Italian should appear in child English. In addition to the possibility of non-inversion in matrix clauses, the linguistic parallel should extend to (i) the compatibility of focus phrases immediately following *why* (ii) use of topic phrases (iii) the possibility of a subordinate clause appearing between *why* and the subject (iv) obligatory inversion in long-distance questions with tensed embedded clauses and (v) optionality of inversion in *why*-questions with infinitival complements. Using a diary corpus of over 900 *why*-questions for a child between 2 and 6 years of age, and other data collected using elicitation procedures, the predictions are shown to be supported. The paper thus provides evidence for the proposal that learning takes the form of setting parameters, and for the continuity assumption, in general.

1. Introduction

The last thirty years have seen remarkable advances in linguistic theory, as well as corresponding advances in our understanding of child language development. These advances were brought about in large part by the shift in the 1980s from rule- and construction-based theories of grammar to a theory of 'Principles and Parameters' (e.g., Chomsky 1981). The Principles and Parameters approach enabled researchers in language development to make many new and far-reaching predictions about the course of language acquisition. According to this framework, children were no longer expected to accrue a system of rules for the particular local language being spoken around them, as in the earlier versions of linguistic theory. In combination, the rules postulated in the previous frameworks formed language-specific constructions, such as the 'passive' construction, or the different varieties of questions that are exhibited across languages. These constructions are seen as artifacts on the Principles and Parameters approach. Many aspects of language variation are now seen to be encoded in the language faculty as an (innately specified) system of principles and parameters, where the parameters establish binary choices about the linguistic properties of particular natural languages. The information necessary for setting these parameters in one way or the other is presumed to be available in the primary linguistic data. The learning component of grammar formation is thus mainly limited to parameter setting, in consultation with the input. In this way, the shift in linguistic theory resulted in a considerably reduction in the amount of learning children are required to undertake (see Chomsky 2002; Rizzi 2004b).[1]

In many cases, the relevant input is apparently recognized by children very early in the course of language acquisition, which has led to a model of child development called Very Early Parameter Setting (VEPS) (Wexler 1998). For word order parameters, for example, Wexler

claims that parameter setting is essentially complete before children even begin to speak. There is nothing in the theory, however, that forces children to set all parameters early. Logically, children could start out with, and maintain, an incorrect value of certain parameters for several months, even years, before coming to terms with the corresponding positive evidence from the target language (but see Yang 2002 for a different point of view). Moreover, some mismatches are expected between the parameter values initially adopted by children and the values that are attested in the input from adult speakers, either because children may adopt a default value for some parameters in order to avoid subset problems (cf. Hyams 1986, Rizzi 2002), or because children may set some parameters in the absence of decisive evidence in the input (cf. Legate and Yang 2005).

The fact that learning plays a less central role in the 'Principles and Parameters' theory, as compared to rule-based, construction-based theories, widens the divide between the theory of Universal Grammar and usage-based models, such as the constructivist approach advocated by Goldberg (2003), Tomasello (2003) among others. The usage-based approach expects child language to be directly tied to experience, so children's developing linguistic competence is expected to be less articulated, but closely matched, to that of adult speakers of the local language. The theory of Universal Grammar, on the other hand, anticipates that linguistic properties which are not attested in the local language, but are appropriate for some other languages, may be manifested in child language. On this scenario, children's linguistic productions are not just a less articulated version of adult productions - they may differ in ways that are not reflected in the linguistic input.

Empirical evidence that children's productions exhibit parameter mis-settings would thus constitute evidence for against usage-based models, and in favor of the Universal Grammar approach. Such findings would support the continuity hypothesis stated by Crain and Pietroski (2002) – who contend that child grammars can differ from adult grammars only in ways that adult grammars can differ from each other (see also Hyams 1986, Pinker 1994, Rizzi 2002).

The present paper documents non-adult data from one child that can be construed as a mis-set parameter and, hence, as evidence for continuity. Longitudinal data from a diary corpus of *why*-questions by a child, A.L., are examined. It is well documented that at least some English-speaking children's *why*-questions behave differently from their other wh-questions, in that children's *why*-questions lack inversion far longer than other wh-questions do. In A.L.'s diary corpus also, *why*-questions contrast with other questions in lacking subject-aux inversion. A brief survey shows that a number of languages, including French (Rizzi 1990), Italian (Rizzi 1999), Irish (McCloskey 2003), and Korean, Japanese and Chinese (Ko 2005) treat *why* (and sometimes other reason adverbials) differently from other wh-phrases. According to Rizzi (1999), the difference, at least for Italian, stems from how different wh-phrases satisfy their syntactic requirements in the CP layer of the phrase structure. Putting aside the details for the present, the wh-phrase *why* takes a different position in the CP layer from other wh-phrases, and as a consequence, it does not require inversion.

A demonstration that *why*-questions in child English are like Italian and French in not requiring inversion does not suffice, on its own, to prove the continuity hypothesis. The observation that children's *why*-questions lack inversion far longer than other questions do can also be accommodated by usage-based approaches, invoking considerations of the input, or performance factors. To decide between these approaches, the present study adopts the research strategy of pursuing one of the consequences of the parametric approach, namely the expectation that setting a parameter one way or the other has ramifications throughout a language. According to many parameter setting models, parametric values are associated with a cluster of properties.

The parameter that distinguishes 'pro-drop' (null subject) languages from languages that require subjects to be overt, is one such example. Pro-drop languages also allow post-verbal subjects; they lack *that*-trace effects; they disallow expletive subjects, and so on (Rizzi 1982). So, these properties are seen to be consequences of setting the pro-drop parameter so as to allow 'null' subjects. Another parameter distinguishes polysynthetic languages from non-polysynthetic languages. Polysynthetic languages have other properties associated with them, such as noun incorporation, causative verb formation, subject and object agreement prefixes, the ability to dislocate noun phrases and so on (Baker 1996; 2001). So, these properties surface as a consequence of setting the parameter associated with polysynthesis.

A recent example from the acquisition literature that adopts the strategy of identifying the cluster of properties that follow from adoption of one parameter value is Snyder's (2001) study on complex predicates. Snyder proposes that a language with the positive value for the parameter, such as English, will exhibit a range of achievement predicates such as resultative structures, verb-particle constructions, *make* causatives, perceptual report constructions and so forth. To trigger the positive value of the parameter, the language learner needs to identify N-N compounds. To make his case, Snyder shows that the appearance of N-N compounds in children's speech correlates with time of emergence for the cluster of achievement predicates.

This paper follows the research strategy of identifying a cluster of properties associated with one value of a parameter. In the present case, however, the claim is that English speaking children have the wrong setting for the parameter. According to the parameter-setting approach, therefore, the language of children who 'mis-set' a parameter should differ from the local language in several highly-specific ways. Thus the next step is to determine whether or not the cluster of properties associated with the Italian setting of the parameter accompanies English-speaking children's *why*-questions. A positive finding would not be expected on usage-based accounts of language development, but would be evidence for the Principles and Parameters approach. A further expectation, on the parameter-based model is that, once the adult-like setting of the parameter is enforced (when English-speaking children's *why*-questions are accompanied by inversion), the cluster of other properties that were associated with the parameter should disappear from children's language.

The present paper adopts this research strategy. Many of the properties can be checked from the diary data. However, in order to determine if the full range of 'Italian' properties is present, elicited production techniques are employed to investigate the use of subject-aux inversion in *why*-questions in which the wh-phrase is extracted from an embedded clause. Such long-distance questions are unlikely to emerge with any frequency in any the naturalistic corpus of data. With the assistance of data from elicited production, a comparison of inversion in matrix *why*-questions and long-distance questions can be undertaken for the first time.

The paper proceeds as follows. Section 2 reviews the previous literature on the acquisition of *why*-questions. Section 3 introduces the basic facts about *why*-questions and some observations from the data from A.L., the child who is evaluated in the present paper. Section 4 turns to the syntax of *why* in other languages, with special emphasis on Italian. Section 5 returns to the child data, to investigate the predictions of the continuity hypothesis. The paper ends, in Section 6, with a discussion of the time course of parameter setting.

2. Subject-Aux Inversion in Children's *Why* Questions

It has been widely observed that *why*-questions resist subject-aux inversion in English-speaking children's grammars long after inversion is manifested in other wh-questions.[2] The topic has been

addressed in a number of papers, among them Berk (2003), de Villiers (1991), Labov and Labov (1978), Rowland and Pine (2000) and Stromswold (1990). Some researchers have investigated the suggestion that children's early questions demonstrate an argument/adjunct asymmetry, with *why* patterning like other adjuncts (such as *how*, *where* etc.) in its failure to invert (e.g., de Villiers 1991, Sarma 1991, Stromswold 1990). Empirical data from other studies (e.g., Berk 2003, Labov and Labov 1978), including the present one, suggest that *why* stands alone in its delayed trajectory towards the adult structural analysis – being considerably slower than all other wh-phrases to induce consistent subject-aux inversion.

In a study of several children's data from the CHILDES database (MacWhinney 2000), de Villiers observed a correlation between children's use of embedded questions with a particular wh-phrase and the emergence of subject-aux inversion with that same wh-phrase. The correlation was evident for the 4 children with sufficient data: Adam, Abe, Sarah and Ross. These data led de Villiers to propose that children have a different analysis of question formation from adults. Whereas it is assumed that adults form questions by moving the wh-phrase to SpecCP and the auxiliary verb or modal from its position in Infl to C, de Villiers suggests that children start out by base-generating all wh-phrases as adjuncts adjoined to IP, following Rizzi's (1990) account of *pourquoi* for French[3]. At this stage, then, there is no C position for the auxiliary verb to move into. To reanalyze wh-phrases as positioned in SpecCP in questions, as in adult English, de Villiers proposed that children must encounter each wh-phrase in embedded questions (e.g. 'I know what Laura did', 'She wonders why he went'); these questions are assumed to provide a clear indication that wh-phrases are positioned in the SpecCP of embedded clauses. The inference was that children then complete the generalization – analyzing wh-phrases as positioned in SpecCP, including ones in matrix clauses. The reanalysis takes place piecemeal for each wh-phrase, once the relevant data from embedded questions is acknowledged. It is assumed that wh-phrases that originate in argument position are the first to be reanalyzed, with adjunct wh-phrases, *how* and *why*, being reanalyzed later in the course of acquisition. *Why* is anticipated to be the last to show subject-aux inversion, and allow long-distance movement due to "embeddings with "why" being provided on a rather infrequent basis by parental talk" (p. 169). Once wh-phrases are analyzed as moved to SpecCP, subject-aux inversion (i.e., I to C movement) follows. At this point, long-distance movement is possible, according to de Villiers. In short, consistent use of subject-aux inversion precedes the appearance of long-distance questions for any wh-phrase, including *why,* on de Villers's analysis.

Other studies have found no argument/adjunct distinction. For example, in a production study of 16 children between 1;11 and 4;2, Berk (2003) reported that *how-* questions that contained an auxiliary verb showed subject-aux inversion 100% (18/18) of the time. Out of the 74 *why-* questions in the data set, 18 had no auxiliary verb, so inversion could not be assessed. Of the remaining 56 questions, however, only 28 (50%) had subject-aux inversion.

In a detailed study of Adam's data in the CHILDES database, Rowland and Pine (2000) observe that *why* and *how* do not pattern alike, contrary to de Villiers's (1991) claim. At least, for transcripts 19-36, when Adam was between 2;11.28 and 3;8.14, Rowland and Pine note that *how* was inverted accurately, so *why* alone was slow to invert. In those transcripts, Adam produced 48 *how* questions and 36 *why* questions. Of these, 85.4% of Adam's *how* questions were inverted, but only 8.3% of his *why* questions had inversion. Rowland and Pine (2000) propose that the pattern in Adam's development was a function of learning. They claim that children have to learn, piecemeal, every combination of wh-phrase and the auxiliary verb/modal it can appear with (*wh + aux)* – 49 in all (see Table 3, p. 172). On this account, the frequent combinations of *wh + aux* are learned before the infrequent ones, with the most infrequent presumably being *why + aux*.

4

Until a particular *wh + aux* combination has been learned, children do not use inversion. Before any particular combination of *wh + aux* is mastered, on this account, children exhibit 'groping patterns' in which templates learned from the input are overlaid on other templates, sometimes causing errors (Braine 1976). For example, non-inversion occurs when a child pieces together a wh-word and a declarative as in 'Why you don't like cakes?', and questions with a doubling of auxiliary verbs, as in 'What don't you don't like?', could be a product of a *wh + aux* that are combined with a declarative.

The account by Rowland and Pine confronts a potential problem, however. There should be a correlation between frequency of a particular question form in the parents' input and its mastery, as measured by its frequency in Adam's corpus. This is not the case, however. What is striking is that Adam fails to invert negative *why*-questions, despite 22 instances of *why + don't* in the parental input in the relevant transcripts. To explain this anomaly, Rowland and Pine point out that all 22 instances were chunks that were followed by a second person subject (*why + don't + you*) suggesting that Adam may have inferred that this pattern could not be generalized to the negative questions he wanted to express. If this is true for *why*, though, it should be true that children can't generalize across persons from any wh-phrase.

From a different standpoint, the intuition behind Rowland and Pine's observation might be recast as the observation that parental instances of *why + don't + you* were suggestions, not *why*-questions seeking information. If so, the 22 cases could be taken as a different speech act. Assuming that children are sensitive to such pragmatic distinctions, Rowland and Pine could be let off the hook. The differentiation between true *why*-questions and suggestions that seems relevant in Adam's data emerges again in the diary data based on A.L., presented in section 3.

The pattern showing *why* lagging behind other wh-phrases in its rate of inversion is most striking in Labov and Labov's diary study of their daughter Jessie. As can be seen in Figure 1 below (adapted from Labov and Labov 1978), the wh-phrases *where* and *how*, alongside *what*, reach a high rate of inversion at about 3;9, whereas *why* did not show reliable inversion until Jessie is over 4 and a half years old. An abrupt change took place in the rate of inversion at about 4;3, climbing from roughly 15% to 75% in just 3 months. Such sharp changes in children's development are more likely to signal grammatical change than learning from the input, which tends to be more gradual (Bloom 1990, Hyams and Wexler 1993, Phillips, 1995).
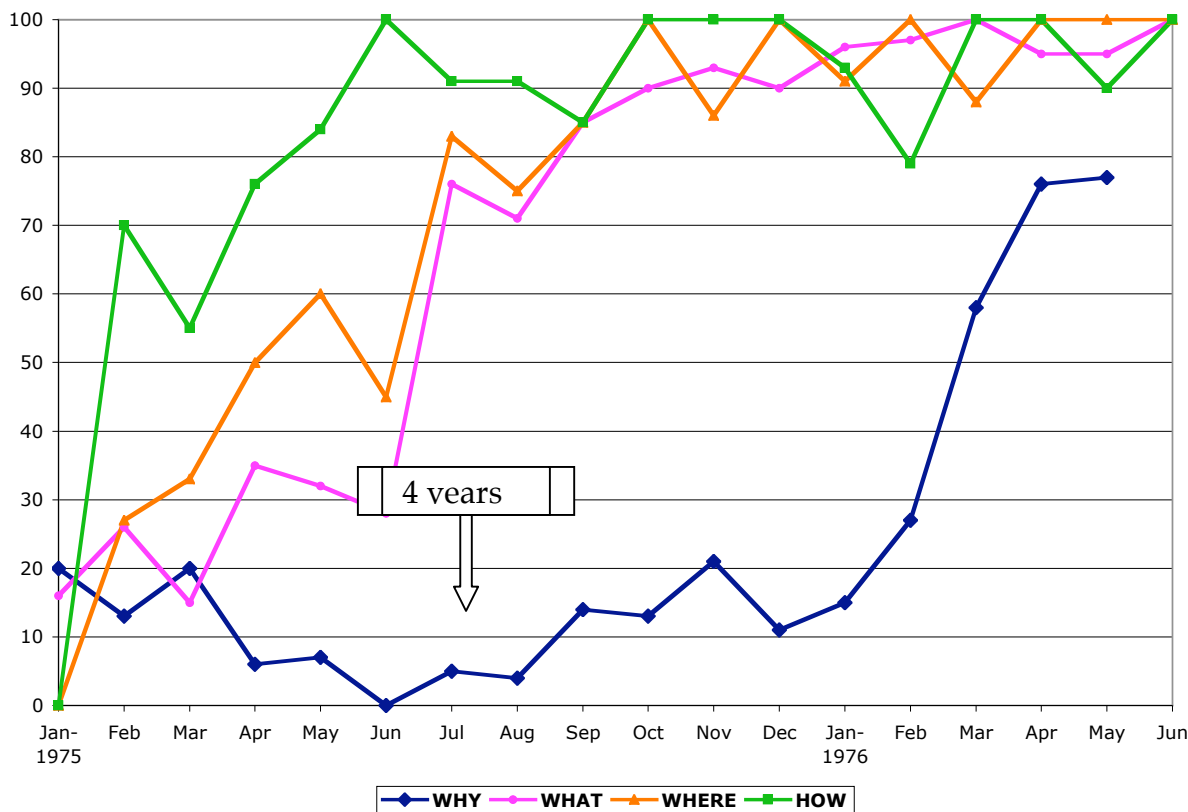
Figure 1: Comparison of Inversion in Why/What/Where/How in Jessie's
Wh-Questions (Adapted from Labov and Labov, 1978)

This same lag in inversion with *why* questions emerged in the diary data of A.L., the child whose data is presented in this paper. While it is possible that an argument/adjunct distinction emerges in some children's questions, for the rest of the paper, we focus on an analysis of children who single out *why* as a lexical item to be treated differently from other wh-phrases.

3.   A.L's *Why*-Questions

The author recorded A.L's *why*-questions from 2 to 5 years, and somewhat less consistently from 5 to 6 years of age[4], yielding a corpus of 925 questions, including 467 negative questions[5]. Although other kinds of wh-questions were not collected systematically, diary notes suggest that A.L. was using subject-aux inversion reliably by about 3 and-a-half years of age with question words other than *why*. There are no productions of the related wh-phrase *how come* in the diary data[6].

   The diary data from A.L. show an interesting differentiation in speech acts that has not been noted previously. In English, the same surface string is used for a number of different speech acts – questions seeking information, suggestions and rhetorical questions. True information-seeking questions can be accompanied by an auxiliary verb or by a modal, whereas suggestions are

6

always accompanied by a negative verb, and rhetorical questions generally appear with the auxiliary verb *would* or sometimes *should* in a positive or a negative form. Crucially, in adult grammars, all of these forms are alike in making use of subject-aux inversion. Examples in (1) illustrate these distinctions.

(1) a. Speaker 1: Why can't we go to the park?   (Information Q)
         Speaker 2: Because the field is muddy after the rain
     b. Speaker 1: Why don't we go to the park?   (Suggestion)
         Speaker 2: What a great idea!
     c. Speaker 1: Why would I want go to the park? (Rhetorical Q)
                     (child's sarcastic response to a suggestion)
         Speaker 2: Get ready to go please!

Examination of A.L.'s diary data showed that A.L. used subject-aux inversion in suggestions and rhetorical questions, but not in information questions. The data show inversion in all suggestions (16/16), with the earliest example at age 2;7. Rhetorical questions first appeared at 4;0, and all examples in the diary corpus (12/12) had subject-aux inversion. Only questions seeking new information revealed a lack of inversion. In this regard, it is interesting to note that jokes in the form of questions were also produced with inversion, presumably because they are not seeking new information – the person telling the joke knows the answer. The diary notes contain 8 instances of A.L. telling jokes, usually of the "Why did the chicken cross the road?" variety, all between ages 4;3 and 4;10, and all with subject-aux inversion. Apparently, A.L. was making pragmatic distinctions that were represented in her grammar in a more fine-grained way than they are in the adult grammars. At any rate, A.L.'s partitioning of the mapping between speech acts and inversion is not modeled on the adult input, since this mapping is not made by adult speakers of English. Examples of A.L.'s suggestions and rhetorical questions and joke questions are given in (2) and (3) and (4) respectively.

(2) a. Why don't we go in the hay? (2;7)
     b. Why don't I try it on [Cinderella's shoe]? (3;3)
     c. Why don't we work together on what we want to do? (3;4)
     d. So why don't you come on the train and we'll go to my house? (3;4)
     e. Why don't you use this as a magic wand? (3;4)
     f. Why don't I be the leader so I can tell you where the shoe mud is? (4;10)
     g. Why don't you come again? (5;0)

(3) a. Why would any witch not do spells? (3;11)
     b. Why would I not eat my cottage cheese? (4;1)
     c. Why would I ever do that? (4;3)
     d. Why would you not have a good luck charm? (4;8)
     e. Father: I hope we hit the runway!
         Why would we not hit the runway? (4;10)
     f. I remember my name. Daddy, why would I forget my name? (4;10)

(4) a. Why does a watch dog go over the road? (4;3)
     b. Why does the pig cross the road? (4;9)
     c. Why was the seven afraid of six? (4;10)

7

d.   Why did the glass tap by itself? (4;10)

The fact that lack of inversion is restricted to questions seeking information makes explanations based on processing complexity unlikely. Appeals to the cognitive complexity of *why* are also unlikely, given that A.L. produces complex nominals with adult syntax from age 3;2 that demonstrate an understanding that *why* is associated with reason. There are 15 such examples in the diary data between 3 and 5 years of age. Examples are given in (5).

(5)   a.   The reason why we took it is because we didn't read it (3;2)
        b.   The reason why it's freezing is it's not working too good [laptop] (3;8)
        c.   The reason why they're getting her is because they want babies to kill (3;8)
        d.   The only reason why we want him to run away is to chase the deer (4;1)
        e.   Why I got back up into bed was because I wasn't comfortable in my sleeping bag (4;2)

One more preliminary point is worth mentioning before turning to the rate of inversion in A.L.'s *why*-questions. It has been noted independently that in negative questions, children exhibit some reluctance to carry the *n't* morpheme along with the auxiliary verb to Comp (Guasti, Thornton and Wexler 1995). This reluctance to 'raise' negation results in a number of different surface forms, with lack of inversion among them[7]. This extra variable in the equation for child language means that the lack of inversion may be exacerbated in children's negative questions and, therefore, that affirmative questions may offer a more reliable measure of when subject-aux inversion is in place. Examples of A.L.'s positive and negative questions with no inversion, across the non-inversion period, are given in (6) and (7).

(6)   a.   Why that boy is looking at us? (2;4)
        b.   Why her mummy didn't buy some stickers for her? (2;5)
        c.   Why the pig got eatened? (3;0)
        d.   Why the monster goed away and never comed back? (3;3)
        e.   Why those cars have their lightheads [headlights] on? (3;7)
        f.   Why grandma just wants to buy furniture? (4;3)
        g.   Why the lights are on in my school? (4;10)

(7)   a.   Why you don't want torty [tortilla] and cheese by itself? (2;5)
        b.   Why anyone's not sitting in that seat? (2;6)
        c.   Why you didn't bring me to Margie's house? (2;7)
        d.   Why we couldn't park in our usual spot today? (3;5)
        e   Why my birthday's not for a long time? (4;3)
        f.   Why they don't do swimming lessons on the stay-home days? (4;8)
        g.   Why you're not coming to the teachers' workshop today? (5;0)
        h.   Why I don't have very big braids? (5;2)
        i.   Why dogs can eat people food but people can't eat dog food? (5;5)

The raw numbers of *why*-questions produced by A.L. from 2 to 5;6 years of age are given in Table 1 below[8]. For the period between 2 and 5;6, a total of 861 information-seeking questions were recorded. The data in the table do not include strings that represent other speech acts, including suggestions, rhetorical questions, and jokes. Two-clause questions with tensed

8

embedded complements and with infinitival complements are also excluded from the numbers in the table; these will be presented separately in section 5. Questions with a double auxiliary such as 'What does he don't like? are considered to involve inversion and are included in the 'Negative Inverted' column. Few questions were recorded between 3;6 and 4 years of age, possibly due to a failure to record data on the part of the author, or possibly because A.L. was attempting to reconcile her grammar with the ambient data during this period.

Age	Positive Inverted	Positive Uninverted	Negative Inverted	Negative Uninverted
2-2;6	37	69	16	22
2;6-3;0	23	20	14	21
3;0-3;6	16	32	11	21
3;6-4;0	1	2	1	1
4;0-4;6	33	39	5	85
4;6-5;0	43	17	12	88
5;0-5;6	93	13	22	104
Totals	246	192	81	342

Table 1:   Raw Numbers of *Why*-Questions produced by A.L.

In Figure 2 below, the raw numbers from Table 1 are graphed as a percentage of questions with subject-aux inversion by 6 month period. The final point on the graph shows the percentage of questions with inversion between 5 and 5;6. At this point, A.L. inverts in positive questions 88% of the time. At this age, inversion still only characterizes 17% of her negative questions; consistent inversion with negation is not achieved until after age 6. Unfortunately, data collection became problematic at this age, with A.L. producing such questions as "Why do you think *why*-questions are interesting?"(5;3), so the data were collected less systematically after 5;6. For this reason, the data after 5;6 are not included.
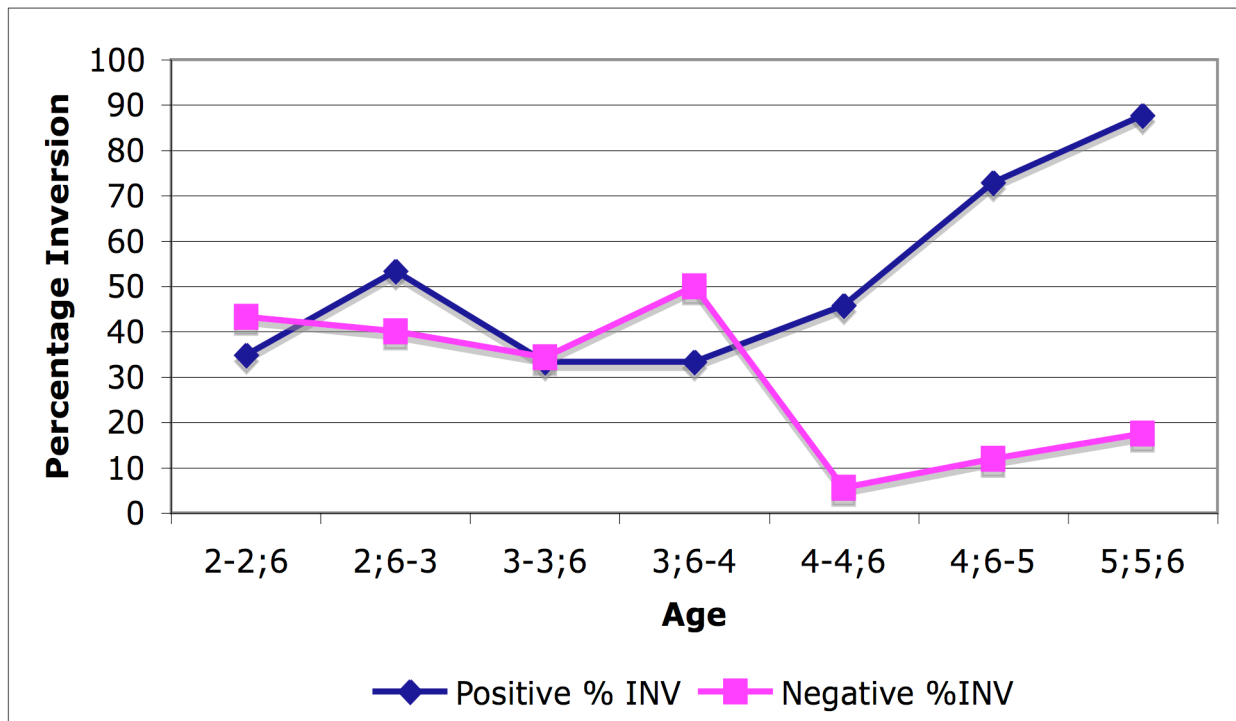
Figure 2:   Percentage of Inversion in A.L.'s Questions by Age

The data clearly show that A.L. was slow to achieve ceiling rates of inversion for *why*-questions. Given that the non-inversion is reserved for information questions, and not for other strings with the same form, such as suggestions etc., we are invited to conclude that A.L. was making a grammatical distinction between *why*-questions and other wh-phrases. Since the distinction is not present in adult English, the next section turns to other languages, to see if Universal Grammar encodes a potential difference between *why*-questions and questions formed with other wh-phrases.

4. The Syntax of *Why* across Languages

This section outlines Rizzi's (1999) proposal about the syntax of *perché* (*why*) and, introduces the cluster of facts that follow from the possibility of non-inversion with *perché*. Where relevant, cross-linguistic facts will be introduced that support the proposal that Universal Grammar provides a difference between *why* (and other reason adverbials) and other wh-phrases.

In Italian, wh-questions exhibit an operation much like subject-aux inversion in English. The difference is that in Italian it is the main verb, not an auxiliary verb, that moves from I to C, to end up adjacent to the wh-element. As (8a) and (8b) show, this movement is obligatory; without I to C movement the wh-question is unacceptable. This holds for all wh-phrases except *why* (*perché*) and *how come* (*come mai*). For these wh-phrases, I to C movement is not obligatory. As examples (9a) and (9b) illustrate for *perché*, both variants with and without inversion, are acceptable[9].

10

(8) a.   Che cosa ha fatto Gianni?   (Rizzi 1999, (16a,b))
           What   has done Gianni
            'What did Gianni do?'

     b.   *Che cosa Gianni ha fatto?
            What   Gianni has done
           'What did Gianni do?'

(9) a.   Perché Gianni è venuto?   (Rizzi 1999, (21a))
           Why   Gianni has come
           'Why did Gianni come?'

     b.   Perché è venuto Gianni?   (Meroni, pc)
           Why   has come Gianni
           'Why did Gianni come?'

     Differences between *perché* and *come mai,* on the one hand, and *che cosa* (*what*) and other 'regular' wh-phrases are also exhibited in the distribution of short adverbs such as *already* (*già*). In declaratives, such short adverbs typically appear between the verb and the past participle, as shown in (10a), but some speakers allow the adverb to appear to the left of the verb, as in (10b).

(10) a.   I   tuoi amici hanno *già*   fatto il lavoro (Rizzi 1999, (17a,b))
           The your friends have   already done the work
           'Your friends have already done the work'

     b.   I   tuoi amici *già*   hanno fatto il lavoro
           The your friends already have   done the work
           'Your friends already have done the work'

In those varieties of Italian that exhibit this pattern, questions with 'regular' wh-phrases such as *che cosa* (*what*) do not tolerate *già* to the left of the verb. This is because the inflected verb must move higher than the adverbial position, to C. Questions with *perché* and *come mai* allow *già* to appear to the left of the verb, however, presumably because movement of the verb is not required (cf. (12)).

(11) a.   Che cosa hanno   *già* fatto?   (Rizzi 1999, (18a,b))
           What   have (they) already done
           'What have they already done?'

     b.   *Che cosa *già*   hanno fatto?
           What   already (they) have done
           'What already have they done?'

(12) Perché (i tuoi amici) *già*   hanno finito   il lavoro?   (Rizzi 1999, (22a))
     Why (your friends) already have   finished the work
     'Why have your friends already finished the work?'

The observed differences in inversion of the verb with the subject and adverb placement shown in examples (8) to (12) lead Rizzi (1999) to propose that *perché* and *come mai* sit higher in the left periphery than do 'regular' wh-phrases, which move to CP, or in Rizzi's terminology, FocusP (cf. Rizzi 1997). For regular wh-phrases, the main verb must carry [+wh] features to the Focus head, to satisfy the Wh-Criterion (Rizzi 1997). However *perché* and *come mai* are base-generated in a higher position, in InterrogativeP (IntP) which is hypothesized to be inherently endowed with [+wh] features; as such, it does not require verb movement to satisfy the Wh-Criterion. In those cases when *perché* is used with inversion, presumably it is placed in SpecFocus, like other wh-phrases. This is always an option in adult Italian[10]. Figure 3 shows the left periphery in main clauses; slightly different facts obtain for embedded clauses that are not relevant for our purposes.
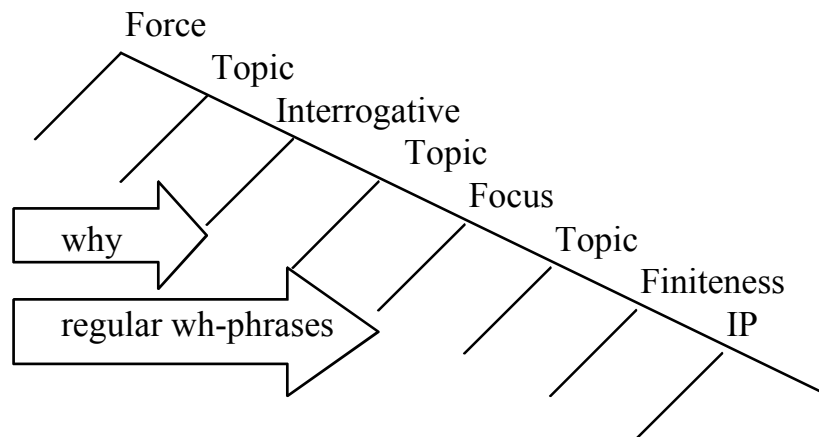

Figure 3: The Left Periphery for Matrix Clauses (Rizzi 1999)

The fact that inversion is not required with *perché* and *come mai* leads to the expectation that material other than just adverbs may also intrude between the wh-phrase and the main verb; subordinate clauses are a case in point. The examples in (13) and (14a) show that this word order is licensed for *perché* but not for *che cosa*. When the wh-phrase is *che cosa,* the *when*-clause must appear after the verb, as shown in (14b).

(13)   Perché quando   va a Milano Gianni compra il panettone?   (Meroni, pc)
        Why   when (he) goes to Milan Gianni buys the panettone
        'Why does Gianni buy panettone when he goes to Milan?'

(14)   a.   *Che cosa quando   va a Milano compra Gianni?   (Meroni, pc)
                What   when (he) goes to Milan buys Gianni
                'What does Gianni buy when he goes to Milan?'

b. Che cosa compra Gianni quando   va   a Milano?
What   buys   Gianni when (he) goes to Milan
'What does Gianni buy when he goes to Milan?'

The fact that *perché* and *come mai* are positioned high in the Interrogative Phrase, above potential Topic and Focus phrases, gives them considerable latitude in the elements that can combine with them. In particular, they can be followed (but not preceded by) phrases expressing contrastive focus, whereas regular wh-phrases cannot be, since regular wh-phrases compete for the same SpecFocusP position in main clauses. The facts are illustrated in (15) for *perché*. Example (16) shows that a focus phrase cannot follow *che cosa*.

(15)   Perché QUESTO avremmo dovuto dirgli, non qualcos'altro? (Rizzi, (23a))
Why   THIS (we) have   should   said, not something else
'Why should we have said THIS to him and not something else?'

(16)   *Che cosa A GIANNI   hanno detto (non a Piero)?   (Rizzi, 1999 (13d))
What   TO GIANNI (they) have said   (not to Piero)
'What have they said TO GIANNI (and not to Piero)?'

The wh-phrase *perché* can also be preceded and followed by Topic phrases, as illustrated in the Clitic Left Dislocation structure in (17).

(17)   Il mio libro, perché, a Gianni, non glielo avete ancora dato? (Rizzi, 1999 (26))
My book,   why, to Gianni, not to-him-it (you) have still given
'Why have you still not given my book to Gianni?'

An interesting asymmetry shows up between matrix questions and long-distance questions with *perché.* In matrix questions, as we have seen, when *perché* is in SpecInt, no inversion takes place, but when it is positioned in SpecFocus like other wh-phrases, inversion takes place. In long-distance questions, inversion is obligatory, however. This follows because in a long-distance question, *perché* questions the embedded clause, and it therefore originates in the lower clause. In long-distance questions, then, *perché* moves successive cyclically to SpecFocus in the matrix clause to satisfy the Wh-criterion (Rizzi, 1999). As a consequence, inversion must follow. This key difference between matrix and long-distance questions will be exploited in the investigation of A.L's grammar.

It must be remembered, however, that wh-questions with 2 clauses are not necessarily given a long-distance reading. The examples in (18) and (19) show the pattern for Italian.

(18)   Perché Gianni ha detto che si dimetterà?   (Meroni, pc)
Why   Gianni has said that self will resign
'Why did Gianni say that he will resign?'

(19)   Perché ha   detto che si   dimetterà?   (Rizzi 1999, (27))
Why   has (he) said that self will resign
'Why did he say that he will resign?'

The question in (18) lacks inversion, as can be seen by the position of *Gianni*, which is to the left of the verb. Therefore, only the local reading of the question is available and the long-distance interpretation is ruled out. Thus, example (18) can only be asking why Gianni *said* he would resign, and not about the reason for his resignation. If inversion is present, by contrast, as in (19), the question becomes ambiguous; it can have a local reading, or it can be given a long-distance reading; here, the question can be asking about Gianni's reason for resigning.

Next consider questions with infinitival complements. Following recent work by Cinque (2000), I assume that in Italian, questions with infinitival complements function like matrix clauses for the purposes of extraction. When the complement of a question with *perché* is an infinitive, non-inversion is judged to be grammatical, and can be contrasted with the ungrammaticality of (20b) in which verb movement has taken place. Some speakers allow inversion as long as the verb raises along with its infinitival complement to be adjacent to the wh-phrase, as in (20c). What is unexpected on the monoclausal analysis is that the same pattern emerges for regular wh-phrases like *che cosa*, as shown in (21). In this respect, questions with infinitival complements do not behave in the same way as matrix questions, where inversion was obligatory for 'regular' wh-phrases.

(20) a. Perché Gianni ha voluto   mangiare il panettone?   (Meroni, pc)
          Why   Gianni has wanted to eat   the panettone
          'Why did Gianni want to eat panettone?'

      b. *Perché ha voluto   Gianni mangiare il panettone?   (Meroni, pc)
          Why   has wanted Gianni to eat   the panettone
          'Why did Gianni want to eat panettone?'

      c. Perché ha voluto mangiare il panettone Gianni?   (Meroni, pc)
          Why   has wanted to eat   the panettone Gianni
          'Why did Gianni want to eat panettone?

(21) a. Che cosa Gianni ha voluto   mangiare?
          What   Gianni has wanted to eat
          'What did Gianni want to eat?'

      b. *Che cosa ha voluto   Gianni mangiare?
          What   has wanted Gianni to eat
          'What did Gianni want to eat?'

      c. Che cosa ha voluto   mangiare Gianni?
          What   has wanted to eat   Gianni
          'What did Gianni want to eat?'

To summarize Rizzi's proposals for *perché* in Italian, we have seen that it is (optionally) base-generated (i.e. merged) high in the phrase structure in SpecInt in matrix questions, in contrast to other wh-phrases, which are moved to SpecFoc, and require inversion. In 2-clause *perché* questions with tensed embedded clauses, both possibilities are viable. If *perché* is merged in SpecInt, however, it can only be questioning the matrix clause. If *perché* is moved into to SpecFoc, it is ambiguous between the local interpretation and a long-distance interpretation. On

the long-distance interpretation, however, *perché* moves successive cyclically from the embedded clause to SpecFoc. *Perché* questions with an infinitival complement can be analyzed as monoclausal, and therefore non-inversion is permitted with *why*, though it is noted that *che cosa* does not fit the monoclausal pattern because it permits non-inversion, unlike in matrix questions.

Thus far, we have seen that in Italian, *perché* shows different syntactic behavior from other wh-phrases, which lead Rizzi to propose that it is base-generated, and occupies a higher position in the left periphery than other wh-phrases. Next we turn to cross-linguistic data that support a universal difference between *why* (and possibly other reason adverbials) and other wh-phrases.

Examining data from wh-in-situ languages such as Korean, Japanese and Chinese, Ko (2005) also reveals evidence for the base-generation of wh-phrases corresponding to *why*, in contrast to other wh-phrases. To explain what is known as the Intervention Effect, Ko (2005) takes the lead from Rizzi's (1999) analysis for Italian. In Korean and Japanese, a question word cannot generally be preceded by an element that bears scope, such as a negative polarity item or an *only* phrase. This is illustrated in (22a), where the phrase *Taroo-sika* (*only Taroo*) cannot precede the question word *nani* (*what*). The word order in (22b), with *Taroo-sika* (*only Taroo*) not moved higher than the question word is grammatical. By contrast, the wh-phrase *way/naze* (*Korean/Japanese why*) allows scope bearing elements to precede the wh-phrase, as shown in (23). In (23a) it can be seen that even when *Taroo-sika* (*only Taroo*) is higher in the phrase structure than *naze*, the question is well-formed. Thus the same asymmetry between *why* and other wh-phrases shows up in a different domain in Korean and Japanese.

(22) a.   *Taroo-sika nani-o   yoma-nakat-ta no? (Adapted from Ko 2005 (3a,b))
            Taroo-only what-Acc read-not-past Q
            'What did only Taroo read?'
      b.   Nani-o Taroo-sika yoma-nakat-ta no?
(23) a.   Taroo-sika naze sono hon-o   yoma-nakat-ta no? (Kuwabara, 1998,
                                                          cited in Ko 2005 (9a,b))
            Taroo-only why that book-Acc read-not-past Q
            'Why did only Taroo read that book?'
      b.   Naze Taroo-sika sono hon-o yoma-nakat-ta no?

According to Ko (2005) the asymmetry comes about because *way/naze* (*Korean/Japanese why*) is merged (that is base-generated) as a modifier in SpecCP[11]. Other elements may therefore be scrambled, or A'-moved, or base-generated above this position, provided that the clause is interrogative. Other wh-phrases cannot be merged in SpecCP, but must move at LF to check off their features, giving rise to the Intervention Effect[12].

Further, in the wh-in-situ languages discussed by Ko, if the clause that is modified by *why* is not an interrogative clause, then *why*, like other wh-phrases, must move at LF to satisfy its feature-checking requirements. This LF movement blocks the appearance of other scope bearing elements, such as phrases with *only*, from appearing higher in the phrase structure. Consider (24).

(24) a.   *John-wa [Mary-sika naze sono hon-o yoma-nakat-ta-to] itta no?
                                                          (Ko 2005 (19a,b))
            John-top Mary-only why that book-acc read-not-past-C said Q
            Why$_1$ did John say that only Mary read that book t$_1$?

b.   John-wa [naze Mary-sika sono hon-o yoma-nakat-ta-to] itta no?
       John-top why Mary-only that book-acc read-not-past-C said Q
       Why$_1$ did John say t$_1$ that only Mary read that book?

In (24), it is shown that the scope bearing element *Mary-sika* (*only Mary*) cannot appear to the left of *naze* if the intended interpretation seeks the reason why only Mary read the book, that is, if the question is being given a long-distance interpretation. If the intended interpretation questions the reason for John saying what he did, then the question can be expressed as in (24b).

   The difference between *why* and other wh-phrases plays out differently across languages. In Irish, empirical evidence that *cad chuige* (*why*) and *cén fáth* (*for what reason*) are sometimes base-generated and sometimes moved is revealed by the choice of complementizer appearing in the question (McCloskey 2002, 2003). In (matrix) *why* questions, *why* is base-generated and therefore obligatorily takes the *aN* complementizer. Here, the *aL* complementizer is disallowed, because this particular complementizer marks a C whose features are checked by movement of a wh-phrase. The contrast is shown in (25).

(25)   a.   Cad chuige a   ndeachaigh tú ann?   (McCloskey 2003, (32))
             Why   aN went   you there
             'Why did you go there?'

       b.   *Cad chuige a chuaigh tú ann?
             Why   aL went   you there
             'Why did you go there?'

In long-distance questions, movement of *why* takes place. On McCloskey's (2002) analysis, *why* is base-generated in the lower clause, so the complementizer is *aN*, as in (25a) above. It then undergoes movement to the matrix clause, giving rise to the *aL* complementizer in the matrix SpecCP. This is illustrated in (26) with the reason adverbial *what reason*, which behaves in the same way as *why* in Irish.

(26)   Cén fáth   a dúirt Pól a   raibh Seán ann?
       What reason aL said Paul aN was   John there
       'Why$_1$ did Paul say that John was there t$_1$'?

   Before we turn to the child data, a slight diversion to investigate the properties of adult English is in order. In English, subject-aux inversion is required for all wh-phrases (other than *how come*). The question that arises is whether *why* is positioned in SpecFoc in English, like other wh-phrases, or whether it is positioned in SpecInt, and induces inversion in this position, perhaps because it lacks the wh-feature. Adult English, at least in standard written and spoken registers, does not exploit the left periphery, but examples like (27) and (28) no doubt occur in colloquial English. A sharp contrast between the acceptability of the *why* and *what* examples would suggest that *why* is positioned high in the phrase structure even in English (Luigi Rizzi, personal communication).

(27)   a.   Why, when he orders pizza, does John always choose pepperoni?
       b.   What, when he orders pizza, does John always choose?

16

(28)   a.   Why, last year, did he buy a 4-wheel drive car?
       b.   What, last year, did he buy?

The *why* examples in (27) and (28) are better than the *what* examples, but the difference is not sharp. Pending further research on this topic, I will assume that SpecFoc is the landing site for all wh-phrases in English. Thus, the presence of inversion in adult *why*-questions should trigger parameter-resetting, at which point *why* should reposition itself in SpecFoc in the phrase structure

　　　Pulling together the cross-linguistic facts, Ko (2005) proposes that a parameter divides languages into those that base-generate reason adverbs like *why* into SpecCP in the phrase structure, and those that do not.[13] For the *wh-in-situ* data from Korean and Japanese, and for the Irish data, there is no obvious data to tell whether or not *why* is base-generated higher in the structure than other wh-phrases, as in Rizzi's proposal for Italian, so Ko does not assume an extended left periphery. This assumption is necessary for Italian, however, to explain data with topic phrases, focus phrases and inversion, and it is a key factor in explaining the data from child English. For this reason, I will give a version of the parameter that makes reference to the varying positions in the CP layer in the phrase structure, as outlined by Rizzi (1999).

(29)   The *why*-Parameter
       a) the wh-phrase *why* is (optionally) merged in SpecInt; other wh-phrases move to SpecFoc

       or
       b) all wh-phrases move to SpecFoc

　　　The data we have examined from A.L suggest that she has adopted the Italian setting of the parameter, and must reset the parameter to the alternative 'English' setting, to lose a number of distinctions from her grammar. In the following section, we return to the complex pattern of facts observed in Rizzi (1999) for Italian, and investigate A.L.'s diary corpus to see if similar facts obtain.

5. Evaluating the Predictions of Continuity

Adult English treats all wh-phrases in the same way with respect to inversion selecting the 'uniform' (b) option of the *why*-parameter in (29). The input from adult speakers of English, therefore, provides no information to children about any of the observed differences displayed in other languages in the syntax of *why* questions and those questions formed with other wh-phrases. Therefore, if children who are acquiring English display knowledge of such differences in their productions of *why* questions, this would constitute a good case for innate knowledge of the linguistic parameter in (29), as well as evidence for the continuity assumption.

　As we saw in the cross-linguistic syntax section, the same setting of the parameter plays out in a slightly different way in wh-in-situ languages, in Irish and in Italian. However, since English and Italian both make use of inversion in questions, if children are adopting a non-target setting of the parameter, we might expect the cluster of properties that follow to be similar to Italian. We turn now to examine whether English-speaking children's *why*-questions exhibit the same cluster of properties as their Romance counterparts[14]. The subsequent predictions for child English are provided in (30); these predictions will be discussed in turn in the following paragraphs.

17

(30)   *Prediction 1:* Children's *why*-questions will be compatible with a focus phrase immediately following *why*.
         Prediction 2: Children's *why*-questions will be compatible with topic phrases (preceding and) following *why*.
         Prediction 3: Children should allow a subordinate clause to be placed immediately after *why*.
         Prediction 4: Children's 2-clause questions with a long-distance interpretation will show obligatory inversion, in contrast to matrix *why*-questions.
         Prediction 5: Children's *why*-questions with infinitival complements will behave as monoclausal questions, and inversion will not be obligatory.

Prediction 1: Children's *why*-questions will be compatible with a focus phrase immediately following *why*.

This prediction is borne out in A.L.'s data, but the empirical support is limited. The diary corpus for A.L. contains two examples in which the phrase immediately following *why* expresses clear contrastive focus. Thus, *why* can be taken to be positioned above the Focus phrase, in SpecInt in A.L.'s grammar. These question forms are clearly unacceptable for adult speakers.

(31)   a.   Why YOU can only do it (and I can't)? [make coffee] (3;2)
        b.   Why SOME OF YOUR MAKE-UP I can't use (and some I can)? (5;2)

Prediction 2: Children's *why*-questions will be compatible with topic phrases (preceding and) following *why*.

There is substantial evidence for this prediction. As in adult Italian (but not in adult English), A.L. allows topics following *why*; time adverbials are particularly plentiful in A.L.'s data. The first example is seen at age 4;2. and there are 10 such examples in the data before she is 5;6. A sample of examples across ages, with the topic phrases italicized, are provided in (32).

(32)   a.   Why *this time* you're opening them like that? (4;2)
        b.   Why *every winter* there's a snowstorm? (4;3)
        c.   Why *every day when I wake up* the hall light isn't on? (5;1)
        d.   Why *last time in New Zealand* you didn't give me a bath (but a shower instead)? (5;2)
        e.   Why *everyday* we're still in the black car? (5;3)
        f.   Why *this morning* you weren't as pleased as you usually are when I read a book? (5;3)
        g.   Why *at Falling Water* kids can't come? (6;3)

Prediction 3: Children should allow a subordinate clause to be placed immediately after *why*.

If English-speaking children's grammars are making use of the extended CP layer, akin to Italian, then the wh-phrase *why* is base-generated in SpecInt, and inversion is not required. This should mean a subordinate clause can precede the main clause. Utterances like (33a), with inversion, are not expected, but ones without inversion, as in (33b) should emerge. If the main

clause precedes the subordinate clause, then inversion will be optional, depending on whether *why* is positioned in SpecInt or SpecFoc, as shown in (33c).

(33)　a.　　*Why do when they go to Milan Italians eat panettone?
　　　b.　　Why when they go to Milan Italians eat panettone?
　　　c.　　Why (do) Italians eat panettone when they go to Milan?

The findings from A.L. are shown in Table 2.

	Subordinate Clause First	Main Clause First
Inversion	0	6
Non-Inversion	7	8
Totals	7	14

Table 2: Number of Examples with Subordinate Clause and Inversion in A.L.'s data

As expected on the present analysis, there were no examples like (33a). A.L. permits subordinate clauses with *if* and *when* to precede the main clause, as in (33b). Examples from the diary corpus are provided in (34). It is of note that there are two similar examples in Jessie's data in Labov and Labov (1978). Such productions are unacceptable for adult English-speakers.

(34)　a.　　Why *when you was a kid* people called you "Rozzy"? (3;5)
　　　b.　　Why *when I was a baby* I loved Boomer's dog food? (3;6)
　　　c.　　Then why *when you're swimming* you have to put it [your face] in? (4;3)
　　　d.　　Why *last year when I invited Emily and Julie to my party* Julie didn't play? (4;4)
　　　e.　　Why *if he goes to jail* she can have his room? (5;0)
　　　f.　　Why *when I went through security* it didn't beep? (6;4)

By contrast, when the main clause precedes the subordinate clause as in (34c), both examples with and without inversion were attested. A sample of questions with the subordinate clause following the main clause are given in (35); the questions in (35a-c) have subject-aux inversion, whereas the ones in (35d-f) do not; the latter cases are unacceptable for adult speakers.

(35)　a.　　Why did Boomer pull you *when you was getting him*? (2;10)
　　　b.　　Why were you worrying about using the phone *if you didn't use the phone on this flight*? (4;10)
　　　c.　　Why does this (ear) keep on blocking *when I put my finger in it*? (5;3)
　　　d.　　Why I can't have McDonalds *while I watch Power Puff girls*? (4;6)
　　　e.　　Why you can't get a baby *when you want one*? (4;11)
　　　f.　　Why I cried *when I was a baby*? (4;11)

In short, the data show that like adult Italian, A.L. allows *why* to merge in SpecInt, making subject-aux unnecessary. As a result, subordinate clauses can follow *why,* preceding the main clause.

Prediction 4: Children's 2-clause questions with a long-distance interpretation will show obligatory inversion, in contrast to matrix *why*-questions.

According to Prediction 4, long-distance questions should always manifest an inverted auxiliary, even at the stage when inversion is lacking (or optional) in matrix *why* questions. If the prediction is borne out, it would be striking evidence in favor of the parametric account.

It is worth reviewing the alternative accounts of children's delay in achieving adult-like *why*-questions with inversion before turning to A.L.'s data. First, any account of children's lagging inversion in *why*-questions that rests on cognitive or processing complexity will not predict superior performance in the longer, more structurally and cognitively complex long-distance questions that ask what someone thinks or said. Usage-based accounts of language acquisition, such as those proposed by Tomasello (2003) and Goldberg (2003) will also make the opposite prediction from our Prediction 4. Since acquisition of a particular construction depends on its frequency in the input, and matrix *why*-questions are likely to be more plentiful than long-distance *why*-questions, usage-based accounts will predict mastery of inversion to be in place in matrix *why*-questions before it is mastered in long-distance questions. Finally, de Villiers (1991) made the prediction that long-distance movement for a particular wh-phrase is only available once subject-aux inversion is mastered for that lexical item. Thus, long-distance *why*-questions should only emerge once inversion has stabilized in matrix *why*-questions.

Prediction 4 is thus crucial to the parametric account, since it stands in opposition to all other accounts in the literature. Unfortunately, children use few long-distance questions in their spontaneous speech, and diary data are likely to fall short in providing a robust data set for evaluation of the prediction. For example, in a search of Brown's corpus for Adam on the CHILDES database, de Villiers, Roeper and Vainikka (1990) found only 16 instances of long-distance movement questions in the transcripts over a three-and-a-half year period. All of the examples were with *what*, and no clear examples were found with adjuncts *how, where* or *why*. Therefore, in order to ensure sufficient data were available to evaluate the prediction, elicited production techniques were used periodically to boost the data set of long-distance questions from A.L.

The most conservative test of prediction 4 would be to limit the comparison to inversion in long-distance *why*-questions and matrix *why*-questions. However, because 2-clause *why*-questions are ambiguous between a local and a long-distance construal, it is challenging to provide situations that unambiguously elicit a long-distance interpretation, and it is also difficult to be sure which interpretation a speaker intended. For this reason, long-distance questions with other wh-phrases were included in the comparison. As in long-distance questions *why*-questions, long-distance questions extracting a wh-phrase from an argument position also require subject-aux inversion. (As in long-distance *why*-questions, the wh-phrase moves to SpecFocusP, requiring I to C movement to satisfy the Wh-Criterion on Rizzi's theory). The advantage of using long-distance questions extracting from argument position to evaluate A.L.'s inversion rate is that they do not permit a local construal. In a question such as "What do you think is in the box?," the wh-phrase *what* is easily identified as related to the subject position of the embedded clause. Furthermore, established techniques exist to allow reliable elicitation of long-distance questions extracting from argument position.

Data for evaluating the prediction was limited to the verbs *think* and *say,* verbs that easily admit long-distance interpretations. Table 3 summarizes the wh-questions with the matrix verbs *think* and *say* that were spontaneously produced, or evoked using elicited production techniques from A.L. between ages 3- to 5-and-a-half years.

	'Other' Wh-phrases	*Why*
Inversion	62	17
Non-Inversion	0	4
Totals	62	21

Table 3: Inversion in A.L.'s 2-Clause Questions with Tensed Embedded Clauses (Age 3;0-5;6)

A total of 83 wh-questions with *think* and *say* were examined, and of these 79/83, that is 95%, had subject-aux inversion. Long-distance questions with wh-phrases other than *why* conform to the prediction of linguistic theory; inversion was present 100% of the time. Among these are questions with *how* and *when* that clearly require successive cyclic movement of the wh-phrase. Examples of long-distance questions with wh-phrases other than *why* are given in (36).

(36)   a.   What did you think was in the cups before we hided them? (3;1)
       b.   Who do you think is going to get the winner's pop? (3;5)
       c.   What do you think is under daddy's chair? (3;5)
       d.   Where do you think Boomer is sleeping? (4;6)
       e.   How do you think he can save his wife and her at the same time? (4;9)
       f.   How do you think you want the outlines colored? (4;10)

Turning to A.L.'s two-clause questions with *why* and the verbs *think/say*, 17 of the 21 questions had inversion. A sample of A.L.'s questions with do-support are given in (37).

(37)   a.   Why do you think Santa's not coming this year? (3;10)
       b.   Why do you think that Boomer came in with us? (4;2)
       c.   Why do you think that Mommy would not wanna
            watch the show? (4;6)
       d.   Why do you not think there's going to be a Little Mermaid? (4;11)
       e.   Why do you think you're gonna have a bad afternoon? (5;0)
       f.   Why do you think that my electric car only goes backwards? (5;5)

However, 4 of the 21, or 19% of the questions, lacked inversion. To evaluate whether these data violate linguistic theory we need to ascertain whether the 4 questions with non-inversion were produced with an intended long-distance interpretation. The four questions at issue are given in (38).

(38)   a.   Why you just think Boomer's [the dog] cute?

21

I'm cute too. (3;7)
b.   Why you said there's no trunk in this car? (4;3)
c.   Why he thinks a back brace protects his leg (4;4)
d.   Why they said they might be going to a movie? Why did they say that? (4;11)

The data with non-inversion can be interpreted in two ways; either (i) A.L. failed to carry out successive cyclic movement and inversion, despite intending a long-distance question, or, (ii) a local construal of the question was intended. The theory would favor (ii), and (38d) supports this interpretation, but it is difficult to make a judgment about the other questions.

In order to evaluate Prediction 4, the inversion rate in 2-clause wh-questions needs to be compared with the rate of inversion in matrix *why*-questions. Linguistic theory predicts 2-clause questions with a long-distance interpretation will all have inversion in contrast to less consistent inversion in matrix questions. As we have seen, overall, A.L. inverted in 95% (79/83) of the questions that potentially were intended as long-distance questions, as opposed to a 56% (246/438) overall inversion rate for positive matrix *why*-questions. To give a fair assessment of the prediction, however, we need to be able to compare A.L.'s matrix and 2-clause questions at any given point in time. Table 4 compares the inversion rate for matrix *why*-questions and 2-clause questions for each 6 month period. Note that the inversion rate for matrix *why*-questions is based on positive questions only. Recall that the inversion rate for negative *why*-questions is considerably lower.

Age	Positive Matrix *Why*-Questions		2-Clause Questions with 'Other' Wh-Phrases		2-Clause *Why*-Questions	
3;0-3;6	16/48	33%	14/14	100%	0	
3;6-4;0	1/3	33%	0		0/1	0%
4;0-4;6	33/72	46%	2/2	100%	1/2	50%
4;6-5;0	43/60	72%	25/25	100%	9/11	82%
5;0-5;6	93/106	88%	21/21	100%	7/7	100%
Totals	289		62		21	

Table 4:   Inversion Rate in Matrix *Why*-Questions and 2-Clause Wh-Questions by Age

The breakdown of data in Table 4 shows that Prediction 4 is best assessed in the 4;6-5;0 time period, and the 5;0 to 5;6 time period when there is sufficient data in each cell. It can be seen that in the 4;6-5;0 time period, A.L. inverted in positive matrix *why*-questions 72%. At the same time, her long-distance questions with other wh-phrases are inverted 100% of the time, and 2-clause *why*-questions 82% of the time (where the 2 non-inverted questions may be local interpretations). In the next time period, between 5;0 and 5;6 inversion has climbed to 88% in matrix *why*-

questions, and again is at 100% for all of the long-distance questions. Prediction 4 can thus be supported.

The breakdown of data in Table 4 also allows us to evaluate de Villiers's (1991) account of the development of wh-questions. According to de Villiers, inversion comes in piecemeal for each wh-phrase. Once inversion is in place for a particular wh-phrase, successive cyclic movement becomes available and long-distance wh-questions are possible. If we take inversion to be 'in place' once it has reached a 90% rate of success, then the proposal is not supported by A.L.'s data. The last two time periods can be used to evaluate the proposal. As we saw, at both of these time periods, inversion is under 90% for matrix *why*-questions (72% and 88%), and more accurate for the 2-clause questions, at 82% and 100% for the 2 time periods respectively. Thus the proposal advanced by de Villiers is not supported by A.L.'s data.

The asymmetry seen in A.L.'s matrix *why*-questions and long-distance wh-questions do not support usage-based accounts of language development. On these accounts, frequency in the input data plays a critical part in deciding the order of in which children learn different constructions. Since long-distance questions are more infrequent in the data than matrix wh-questions, children should master the properties of matrix wh-questions, including inversion, before they master the properties of long-distance ones. This is not the case, however. To the contrary, the data from A.L. support an account in which children's productions are a reflection of their innate linguistic competence, here a non-adult parameter setting.

Prediction 5: Children's *why*-questions with infinitival complements will behave as monoclausal questions, and inversion will not be obligatory.

Prediction 5 states that *why* questions with infinitival complements will have the same profile as matrix *why* questions. This prediction follows the analysis by Cinque (2000) for Italian, who argues that certain verbs including modals, aspectual and motion verbs that take infinitives as their complements have monoclausal, not biclausal structures. It is not clear, however, that the Italian data are in line with this prediction. Although non-inversion is good with *perché*, the expected asymmetry breaks down, as native speakers allow, in fact require, non-inversion with *che cosa* questions with infinitival complements. However, we can check the child data, and at least investigate whether *why*-questions with infinitival complements do not show obligatory inversion.

The child English data are shown in Table 5. A.L. inverts 100% of the time (19/19) in infinitival questions when the wh-phrase is not *why*, and with *why*, the inversion rate is only 39% (25/64). So, in fact, A.L.ls data show what might have been expected for Italian.

	'Other' Wh-phrases	*Why*
Inversion	19	25
Non-Inversion	0	39
Totals	19	64

Table 5: Inversion in A.L.'s Questions with Infinitival Complements (Age 3;0-5;6)

Examples of A.L.'s *why*-questions with infinitival complements are given in (36); uninverted examples in (36a-d) and examples with subject-aux inversion in (36e-g). Infinitival questions with other wh-phrases are given in (37). The *why*-questions appear in inverted and uninverted forms with some of the same verbs – *want to/wanna, have to*, and *gonna*, so it can be assumed that it is the wh-phrase that is responsible for the presence or lack of inversion. As it is stated, Prediction 5 is supported.

(39)   a.   Why he wanted to watch on the moon? (3;11)
       b.   Why we have to take the bikes to the shed? (4;1)
       c.   Why you get to wear a necklace and I can't? (4;4)
       d.   Why you don't want anyone else to find out about it? (4;9)
       e.   Why do dogs don't have to wear seat belts? (4;3)
       f.   Why did daddy wanna tape the other song? (4;6)
       g.   Why do you hafta have a special tag to park in that parking spot? (5;4)

(40)   a.   What do you wanna watch, daddy? (4;1)
       b.   Which jewel do you want them to take? (4;7)
       c.   Which color do you want me to draw with? (4;11)

Although the fact that A.L. does not invert with *why*-questions provides clear support for the idea that A.L. is generating monoclausal structures, some caution should be exercised. While this proposal provides a natural explanation for a number of transparency effects such as clitic climbing etc. that are found in Italian, English does not share these phenomena, so one might question whether English-speaking children should be expected to make the monoclausal assumption. Nevertheless, even in English, infinitival clauses are 'smaller' than tensed clauses; at least IPs rather than CPs. Consequently, it is likely that infinitival clauses will show different extraction behavior as compared to tensed clauses.

Differences in extraction between tensed embedded clauses and infinitival clauses have been documented previously in English-speaking children. One relevant example is the medial-wh phenomenon, which appears when extraction is from tensed clauses, but not from infinitival clauses with *want* and *have to* (Thornton 1990), as illustrated by the examples in (41).

(41)   a.   Who do you think who Cookie Monster will help?
       b.   #Who do you want who to help?

If the alternative idea that infinitival complements are IPs in English is pursued, then we have to relinquish Cinque's proposal that the structures are monoclausal. Cedric Boeckx (personal communication) suggests a proposal that draws on Law (1991). Like Rizzi (1990, 1999), Law also argues that *why* is base generated. The difference is that Law suggests that *why* is always base-generated even when it modifies the embedded clause. Since there is no SpecCP in which to move *why* through in infinitival clauses, *why* must be base-generated directly in the matrix SpecCP. It follows that no inversion is expected. Further research will determine which direction to pursue.

6.   Conclusion

In this paper, the properties of English-speaking children's *why* questions have been found to match in considerable detail the properties of *why* questions in adult Italian. The cross-linguistic parallel is not limited to the possibility of non-inversion in matrix clauses, but extends to (i) compatibility of focus phrases immediately following *wh*y, (ii) use of topic phrases, (iii) the possibility of a preceding subordinate clause, (iv) obligatory inversion in long-distance questions with tensed embedded clauses, and (v) optional inversion in *why*-questions with infinitival complements.   Thus an entire cluster of properties emerges along with the non-inverted matrix *why* questions. These observations lend strong support to the continuity hypothesis – the idea that child grammars differ only in ways that adult grammars differ from each other (Crain and Pietroski 2002).

Data-driven accounts such as the constructionist approach advocated in Tomasello (2000; 2003), Goldberg (2003) and elsewhere would be hard-pressed to explain these data, for several reasons. First, this group of properties is not manifested in the environmental input to children learning English. Children learning English are not exposed to large quantities of noninverted *why* questions, let alone ones with intruding focus or topic phrases, or preceding subordinate clauses and so on. Even if one could make the argument that there are sufficient data in the input to lead children to hypothesize that *why* questions are not always inverted, or to hypothesize any individual constructions that make up the cluster of properties, it would not follow that the entire cluster of properties would emerge in tandem. On any data-driven account, these properties would be expected to emerge one by one, as the child encountered evidence for each individual 'construction'. The empirical evidence from A.L. runs counter to this scenario. As the examples from A.L.'s corpus show, the varying phenomena all appear across the 3- to 5-and-a-half age period that is studied in detail.

Cross-linguistic data have given support for a parameter that differentiates *why* (and possibly other reason adverbials) from other wh-phrases. Apparently, A.L. persists with the incorrect setting of the *why*-parameter for a considerable period of time. It is unlikely that the delay in setting the parameter can be put down to the paucity of input data (Yang 2002) or ambiguous data, as Legate and Yang (2005) suggest for the late-disappearing optional infinitive phenomenon in English. All the child needs to do is identify that adult *why*-questions exhibit inversion. While it may be that many *why* strings in the adult input are suggestions, A.L. is apparently sensitive to this distinction, so it should not be problematic to identify information questions. Either way, all of the suggestions and information questions in the input exhibit subject-aux inversion. So, why does A.L. take so long to reset the parameter?

Many parameters are considered to be set very early, even before the child begins to speak (Wexler 1998). One might think of these early set parameters as more major parameters – in Baker's (2001) terms, as ones nearer the top of the parameter hierarchy. This makes good sense, as it would be difficult to render English as a polysynthetic language, or a head-last language, and so forth. At least with the more minor parameters, nearer the bottom of the parameter hierarchy, the child can still speak their native language, it just has a 'foreign flair'. We can propose, then, that the *why*-parameter is a more minor parameter, and that this is a contributing factor.

There is another factor. While it is generally accepted that experience is used to set parameters, little if anything is known is what mechanisms cause the child to confront the input data, and use it to switch parameter values. According to Yang (2002) statistical learning is used to set parameters, and thus the change in parameter value is expected to show gradual change, as the two potential values compete with each other. The data presented in this paper, however, are

not indicative of gradual learning; rather A.L. appears to project the Italian setting of the parameter until change is initiated.

The final issue is whether children flip a coin and pick either setting of the *why* parameter, or whether one setting is specified as a default. The answer to this question is unclear at this point. What *is* clear is that not every child goes through the protracted period of non-inversion with *why*, as witnessed in Jessie and A.L.'s *why* questions. Many 4-year-old children are consistently using subject-aux inversion with all wh-phrases. This is not to say that only some children go through a period of non-inversion with *why*. It may be that all children pass through this phase, but the period of non-inversion period is short, even fleeting, for some children. If so, then it may be that the Italian value is specified as a default, perhaps because non-inversion reduces the computational load on the production system (cf. Rizzi 2002, Rizzi 2004). If it is not the case that all children go through a period of non-inversion with *why*, then perhaps children simply choose either value of their parameter as their initial guess. Further research with a larger group of young children will be needed to shed light on the initial setting, and to answer the question of whether all children show evidence of this stage at some point in their linguistic career. The contribution of the present case study of A.L.'s data has been to demonstrate that a mis-set parameter can be responsible for the emergence of a cluster of properties.

References

Baker, Mark (1996) *The Polysynthesis Parameter*. New York: Oxford University Press.

Baker, Mark (2001) *The Atoms of Language: The Mind's Hidden Rules of Grammar*. New York: Basic Books.

Berk, Stephanie (2003) Why "why" is different. In B. Beachley, A. Brown and F. Conlin (eds.) *BUCLD 27*, 127-137. Somerville, MA: Cascadilla Press.

Bloom, Paul (1990) Subjectless sentences in child language. *Linguistic Inquiry* 21, 491-504.

Braine, Martin (1976) Children's first word combinations. *Monographs of the Society for Research in Child Development 41* (1, Serial No. 164).

Chomsky, Noam (1981) *Lectures on Government and Binding*. Dordrecht: Foris Publications.

Chomsky, Noam (2002) *On Nature and Language*. Cambridge: Cambridge University Press.

Cinque, Guglielmo (2001) "Restructuring" and functional structure. In L. Brugè (ed.) *University of Venice Working Papers in Linguistics 11*, 45-129.

Conroy, Anastasia (2006) A look at *how come* and *factivity*. *Maryland Working Papers in Linguistics* 14.

Crain, Stephen and Paul Pietroski (2002) Why language acquisition is a snap. *The Linguistic Review 19*, 163-183.

De Villiers, Jill, Thomas Roeper and Anne Vainikka (1990) The acquisition of long-distance rules. In Lyn Frazier and Jill de Villiers (eds.) *Language Processing and Language Acquisition*. Dordrecht: Kluwer Academic Publishers.

De Villiers, Jill (1991) Why questions? In Thomas Maxfield and Bernadette Plunkett (eds.) *UMOP Special Edition: Papers in the Acquisition of Wh*, pp. 155-175. Amherst, MA: GLSA.

Goldberg, Adele (2003) Constructions: A new theoretical approach. *Trends in Cognitive Science 7*, 219-224.

Guasti, Maria Teresa, Rosalind Thornton and Kenneth Wexler (1995) Negation in children's questions: The case of English. In D. MacLaughlin and S. McEwen (eds.) *BUCLD 19*, 228-240. Somerville, MA: Cascadilla Press.

Hyams, Nina (1986) *Language Acquisition and the Theory of Parameters*. Dordrecht: D. Reidel.

Hyams, Nina and Kenneth Wexler (1993) On the grammatical basis of null subjects in child language. *Linguistic Inquiry 23*, 421-460.

Ko, Heejeong (2005) Syntax of Why-in-situ: Merge into [SpecCP] in the overt syntax. *Natural Language and Linguistic Theory 23*, 867-916.

Labov, William and Teresa Labov (1978) Learning the syntax of questions. In R. Campbell and P. Smith (eds). *Recent Advances in the Psychology of Language III:4b*, pp. 1-44. New York: Plenum Press.

Law, Paul (1991) *Effects of Head Movement on Theories of Subjacency and Proper Government*. Doctoral dissertation, MIT.

Legate, Julie and Charles Yang (2005) Morphosyntactic learning and the development of tense. Ms., University of Delaware and Yale University.

MacWhinney, Brian (2000) *The CHILDES project: Tools for analyzing talk*. Third Edition. Mahwah, NJ: Lawrence Erlbaum Associates.

McCloskey, James (2002) Resumption, successive cyclicity and the locality of operations. In S. Epstein and D. Seely (eds.) *Derivation and Explanation*, pp.184-226. Malden, MA: Blackwell Publishers.

McCloskey, James (2003) Working on Irish. *GLOT 7*, 63-72.

Phillips, Colin (1995) Syntax at age two: Cross-linguistic differences. *MITWPL 26*, 325-382.

Pinker, Steven (1994) *Language Learnability and Language Development*. Cambridge, MA: Harvard University Press.

Rizzi, Luigi (1982) *Issues in Italian Syntax*. Dordrecht: Foris Publications.

Rizzi, Luigi (1990) *Relativized Minimality*. Cambridge, MA: MIT Press.

Rizzi, Luigi (1997) The fine structure of the left periphery. In L. Haegeman. (ed.) *Elements of Grammar*. Dordrecht, The Netherlands: Kluwer Academic Press.

Rizzi, Luigi (1999) On the position "Int(errogative) in the left periphery of the clause. Ms. University of Siena.

Rizzi. Luigi (2002) On the grammatical basis of language development: A case study. Ms. University of Siena.

Rizzi, Luigi (2004a) On the nature of grammatically based omissions in child language. Talk given at The Romance Turn: Workshop on the Acquisition of Romance Languages, Madrid, Spain, September.

Rizzi, Luigi (2004b) On the study of the language faculty: results, developments, and perspectives. *The Linguistic Review 21*, 323-344.

Rowland, Caroline and Julian Pine (2000) Subject-auxiliary inversion errors and wh-question acquisition: 'what do children know?' *Journal of Child Language 27*, 157-181.

Sarma, Jaya (1991) *The Acquisition of Wh-Questions in English*. Doctoral dissertation, University of Connecticut.

Snyder, William. (2001) On the nature of syntactic variation: Evidence from complex predicates and complex word-formation. *Language 77*, 324-342.

Stromswold, Karin (1990) *Learnability and the Acquisition of Auxiliaries.* Doctoral dissertation, MIT.

Thornton, Rosalind (1990) *Adventures in Long-Distance Moving: The Acquisition of Complex Wh-Questions*. Doctoral dissertation, University of Connecticut.

Tomasello, Michael (2000) Do children have adult syntactic competence? *Cognition 74*, 209-253.

Tomasello, Michael (2003) *Constructing a language: A Usage-Based Theory of Language Acquisition*. Cambridge, MA: Harvard University Press.

Wexler, Kenneth (1998) Very early parameter setting and the unique checking constraint: A new explanation of the optional infinitive stage. *Lingua 106*, 23-79.

Yang, Charles (2002) *Knowledge and Learning in Natural Language*. New York: Oxford University Press.

Endnotes

[1] Advocates of the Principles and Parameters framework acknowledge that there is also a 'residue' of facts that must be learned, but which do not follow from the finite set of parameters. However, the emphasis of the approach is to reduce the set of facts that must be learned by children as much as possible, in order to explain children's universal mastery of language (i.e., in order to achieve 'explanatory adequacy'). The introduction of parameters to linguistic theory vastly reduces the 'residue' that children must learn.

[2] For much of the paper, I will use the term subject-aux inversion to refer to what is termed 'I to C movement' in more recent syntactic literature. These terms refer to the movement of the auxiliary verb or modal from the head of the inflection phrase (Infl, or I) in the phrase structure to the head of the complementizer phrase (Comp, or C) that accompanies fronting of a wh-phrase.

[3] Rizzi (1990) makes the claim only for *pourquoi*, but de Villiers (1991) extends it to all wh-phrases.

[4] A.L. is the author's child.

[5] Diary data are sometimes criticized as a methodological tool on the basis that they represent only what catches the parent's attention, and not the more mundane. The author was aware of this drawback and endeavored to record all *why*-questions, not just the uninverted ones that stood out.

[6] It is sometimes suggested that children fail to invert in *why*-questions on analogy with *how come*, which does not invert in adult English. The absence of *how come* from A.L.'s production data makes any analysis based on the properties of *how come* unlikely.

[7] Children also ask double-aux questions such as "What do you don't like?" and they ask questions like "What do you not like?" with *not*, in situations where an adult would use the clitic *n't*.

[8] A.L.'s questions after 5;6 are not included in the table.

[9] Throughout the paper, I illustrate the facts using *perché*, but in most cases, the same observations hold for the wh-phrase *come mai*. *Perché* and *come mai* do show some differences in behavior, however. As Conroy (2006) notes, *come mai* is factive, and therefore cannot be used to make suggestions.

[10] It would be interesting to know whether Italian children in the early stages of acquisition always exercise optional inversion with *perché*, or whether they consistently use the non-inversion option at first. If so, inversion with *perché* is a later learned option.

[11] The relevant point is that *why* is base-generated, not moved. There is no empirical data that can decide whether *why* sits in a different position in the phrase structure in these languages, so Ko (2005) does not pursue this.

[12] Ko (2005) assumes that a wh-phrase is attracted to a position where its uninterpretable wh-feature [+Q] is checked off, in keeping with Minimalist syntax. The term 'merge' is used instead of 'base-generate'.

[13] Ko (2005) also suggests that certain languages seem to designate a particular reason adverb to be merged into the structure, rather than to undergo movement, but this is not important for present purposes.

[14] The comparison between child English and Italian is limited to the properties of *why/perché* questions seeking information, and excludes a comparison of suggestions and rhetorical questions. It is acknowledged however, that the similarity between child English and Italian appears to break down when extended to the full range of speech acts because A.L.'s always uses subject-aux inversion in suggestions, whereas Italian does not require inversion (Conroy 2006). I

29

leave this question for future research, pending further syntactic analysis of these structures in each language.