

Why-questions in L2 Acquisition

Hyeson Park
(University of South Carolina)

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It has been observed that children learning English as their L1 or L2 apply subject-auxiliary inversion or do insertion (S-Aux inversion) gradually in *wh*-questions beginning with argumental *wh*-questions and spreading to adjunct *wh*-questions. The application of S-Aux inversion was found to appear last in *why*-questions. This paper attempts to account for the delayed S-Aux inversion in *why*-questions. The analysis will show that morphological characteristics of *why* are responsible for the late S-Aux inversion found in developing grammars of English as an L1 and L2.

Key words: L2 acquisition, S-Aux inversion, *why*-questions

1. Introduction

Studies on the acquisition of *wh*-questions in L1 English have observed that English children go through the following developmental stages: 1) obligatory *wh*-movement, 2) subject and auxiliary verb inversion or do support (henceforth, S-Aux inversion) for argument *wh*-questions, 3) S-Aux inversion for non-argument *wh*-questions (Labov & Labov, 1978; Kuczaj & Brannick, 1979; De Villiers, 1991; Plunkett, 1991; Radford, 1994). One noticeable finding was that S-Aux inversion appears gradually, beginning from argument *wh*-questions, spreading to non-argument *wh*-questions, and finally in *why*-questions. In my analysis of the interlanguage of Korean learners of English, it was observed that *why*-questions are the last one where S-Aux inversion was applied. In this paper, I would like to propose a possible explanation for the late application of S-Aux inversion in *why*-questions both in L1 and L2. Two possible approaches to the exceptional developmental pattern of *why*-questions will be considered; one syntactic and the other morphological. The morphological explanation will be shown to be more promising in explaining the behavior of *why*.

This paper is organized as follows: In section 2, I provide data on the acquisition of *wh*-questions in L1 and L2, focusing on *why*-questions. In section 3, I review previous approaches to late S-Aux inversion in *why*-questions within the Principles and Parameters (P&P) framework and point out some weaknesses. In the second part of section 3, I will consider *why*-questions within the feature checking model of the Minimalist Program (MP). It will be shown that the syntactic feature checking approach has a similar weakness as the P&P approach. In section 4, I will propose an analysis of the late S-Aux inversion in *why*-questions based on morphological characteristics of *why*, and would argue that this approach can better explain the exceptional behavior of *why* in language acquisition.

2. Data

2.1. Data from Previous L1 Studies

In their study of the acquisition of *wh*-questions in English, Labov & Labov (1978) found that their subject Jessie applied the S-Aux inversion rule gradually *wh*-word by *wh*-word: she first used S-Aux inversion in *how*-questions, then in *where/what*-questions. Inversion in *why* questions did not occur till the last stage of data collection. Labov & Labov speculated that Jessie might have a special rule of her own, that is: Invert after all *wh*-words except *why* (Labov & Labov, 1978, p. 9).

Plunkett (1991) analyzed Adam's *wh*-question sentences from CHILDES data. Adam's S-Aux inversion in *wh*-questions occurred before file 20, beginning with *who* and *what*, and Adam seldom failed to invert subject and verb in argument *wh*-questions from file 27 on:

- (1) What kind of basket is dis?
 What is that for?
 Where is my marble book?

Though Adam also applied S-Aux inversion in *how*-questions from file 26 on, according to Plunkett, it appeared mostly in routine questions like "How do you know?" *Why*-questions also appeared with S-Aux inversion around this period, but non-inverted *why*-questions continued to appear

beyond file 48:

- (2) Why they were cutting de animal out? (file 37)
 Why four men are eating it? (file 48)

De Villiers (1991) analyzed the onset of S-Aux inversion in *what*-, *how*-, and *why*-questions from CHILDES data. The following table shows the file numbers in which the accumulated number of S-Aux inversions for each *wh*-word type exceeds 10.

Table 1. File Numbers
 (where the accumulated number of S-Aux inversions exceeds 10)

	what	how	why
Adam	35	16	42
Abe	64	90	90
Sarah	100	90	140
Ross	31	44	35

Though there is variation among the children in their application of the S-Aux inversion rule, the data shows that S-Aux inversion in *why*-questions occurred later than (Adam and Sarah) or at the same time (Abe) in other *wh*-questions except in the case of Ross. The S-Aux inversion in *how*-questions appears unpredictable: in the case of Adam, the S-Aux inversion rule was first applied in *how*-questions, while for Ross, *how*-questions were the last to which the S-Aux inversion rule applied. According to De Villiers, the irregular behavior of *how* may be due to the fact that children use *how*-questions as a memorized chunk as in “How do you know?”¹⁾

Kuczaj and Brannick (1979) examined the gradual application of the S-

1) *How*, though an adjunct like *why*, appears to behave differently from *why*. In her study of the acquisition of auxiliary verbs in English, Stromswold (1992) provides data which show the use of *wh*-questions by 12 English-speaking children. Though we cannot compare the acquisition order of *why* and *how* since she does not provide the number of *why*-questions, it is shown that the number of *how*-questions used with S-Aux inversion exceeds that of *who*-questions (623 vs. 170), which goes against the general acquisition order, argument questions > adjunct questions. Since the main concern of this paper is the late S-Aux inversion in *why*-questions, we will not pursue S-Aux inversion in *how*-question. However, it seems clear that S-Aux inversion in *how*-questions, though very irregular, precedes that in *why*-questions.

Aux inversion rule in more detail. In their assessment of children's knowledge of S-Aux inversion in imitation and grammaticality judgment tasks, they found that children applied the S-Aux inversion rule in a gradual *wh*-word by *wh*-word sequence rather than in a simultaneous generalization across either argument *wh*-questions or adjunct *wh*-questions. The children first used S-Aux inversion in questions beginning with *what* and *where*, and then *who*, and finally generalized the rule to questions with *how* and *why*.

Lee (2001) examined the S-Aux inversion in *who*-, *how*-, and *why*-questions. 17 English-speaking kindergarteners participated in picture elicitation tasks which were manipulated to get the subjects to produce questions using *who*, *how*, or *why*. There were 5 tasks per each type of question, totaling 15 questions. The mean numbers of inverted *wh*-questions were 3.88 for *who*, 2.94 for *how*, and 2.82 for *why*. Though the inversion rates for *how* and *why* are not significantly different, the result still supports the findings of previous studies that *why*-questions are the last to appear with S-Aux inversion in the developing grammar of English.

2.2. Data from L2 Acquisition

2.2.1. Production Data

For my study, I examined two sets of data: natural production data and grammaticality judgment data. The natural production data was collected by the National Center for Bilingual Research (NCBR) between 1981 and 1983. The subjects of the study were two Korean children, KH and SM, who had immigrated with their parents to the Los Angeles area. The children were seven years old at the beginning of the data collection. The data collection began nine months after the children arrived in the U. S. and continued for three years. The data were gathered at school and at home once a month. At school, KH and SM wore a small tape-recorder on the belt around their waist and were recorded for 60 to 90 minutes while they were engaged in various activities. The children used Korean most of the time at home, and semi- or structured elicitation tasks were used to obtain English utterances. Thus, the data includes both spontaneous speech and elicited speech from story telling and directed conversation. For the convenience of analysis, I divided the entire corpus into 10 samples, each of which covers a three-month period. The following is a

short description of the development of *wh*-questions in the interlanguage of KH and SM.

KH: One of the distinct characteristics of KH's question sentences is that she produced *why*-questions from the very beginning. The *why*-questions, however, occur without S-Aux inversion ("Why you playing like that?") despite the fact that other *wh*-questions appear with S-Aux inversion ("How do you...?" "How could I...?" "What should I...?"). The only *why*-question with S-Aux inversion was uttered when KH repeated what an adult told her before: "Why did you do write this thing?" (sample 5). In sample (3), she produces both *how*- and *why*-questions; with S-Aux inversion in the *how*-question ("How could I do this in here?"), but without inversion in *why*-questions ("Why we cant eat our lunch?" "Why they're not giving us the catsup?"). The in-situ auxiliaries in KH's *why*-questions support our argument that children learning English as an L1 and L2 do not apply S-Aux inversion in *why*-questions until later stages of language acquisition, though they have already acquired the auxiliary system of English. The overall sequence of appearance among the *wh*-words in KH's data is: *what, why* >> *where* >> *how* >> *how come* >> *who* >> *how much*. An embedded *wh*-question occurred early in sample 2 ("I know why I could do it."), but they were used more frequently after sample 6. In most embedded *wh*-questions, KH used the correct S+V order except for two cases in sample 6: "Do you know where's bathroom?" and "Do you know who's David?" However, during the same period, KH uttered sentences like "I only know where it is." and "You dont know what this is."

SM: *Wh*-questions uttered by SM include *where, why, what, who* and *how come*. SM correctly applies S-Aux inversion in *where-, what-* and *who*-questions except in one case where she says "What her's doing?" In the case of *why*-questions, she does not apply S-Aux inversion in early stages ("Why we always have to pay money here?" "Why you not coming to our school?"). S-Aux inversion in *why*-questions occurs in sample 8 ("Why are you leaving us and going?"). Embedded *wh*-questions appear early in sample 2, and the word order of the embedded clause is *wh+V+ S* ("I know where is eight."). However, by sample 5, SM seems to have learned that the word order of the embedded clause is *wh+S+V*. In some cases after sample 5, SM still uses the incorrect order, *wh+be+S*. But a close look at the data shows that in these cases, SM seems to have analyzed *wh + -s* as one word, as can be seen in samples 5 and 6 ("She

don't know what's chicken pox is." "Do you know what's this mean?"). The gradual application of S-Aux inversion rule does not appear clearly in our L2 production data, possibly due to the fact that the children have already passed the stage where a gradual S-Aux inversion applies. However, the delayed S-Aux inversion in *why*-questions is seen in KH's and SM's data. Table 2 summarizes the number of *wh*-questions uttered by KH and SM with or without S-Aux inversion.

Table 2. Number of Wh-questions Per Sample

sample	KH	SM
1	what(I) why(NI)	where(I)
2	what(I) why(E) where(I)	where (2-I, 1-E) why(I)
3	why(2, NI) how(I)	what(I)
4	how(3, +infinitive; 1-I)	what(3-I, 1-NI) why(NI)
5	what(3-I) why(1-I, 1-NI)	what(1-I, 3-E) why(NI) who(2) how come(2)
6	what(E) why(E) where(3-I) who	what(8-I, 6-E) where(I) why(NI)
7	what, why, where, how(E), how(I)	what, why, where, how
8	N/A	what(2-I) where(I) why(I)
9	what (3-I) why (2-E) how (I)	what(2-I) where (2-I, 2-E)
10	what(1-I, 4-E) how (E) how much(E)	N/A

(I: inversion NI: non-inversion E: embedded clause numbers: the number of *wh*-Q produced in each sample)

2.2.2. Grammaticality Judgment Data

The second set of data was collected using a grammaticality judgment questionnaire. The questionnaire consisted of 60 interrogative sentences, which included *what*-, *where*-, *how*-, and *why*-questions, 12 sentences for each. The verb used for each type of *wh*-questions were 1) main verb *be*, 2) auxiliary verb *have*, 3) modals *can*, *will*, and *should*, and 4) auxiliary verb *do*. There were also 12 *yes/no*-questions, which functioned as distractors.

The subjects were 40 Korean students learning English as an L2 in a formal classroom setting in Korea. All the subjects were 8th graders in a local middle school for girls. They started to learn English when they were in the 3rd grade. For the four years from the 3rd to the 6th grade, the class hours assigned for English were two hours a week, and the focus of the lessons was everyday conversation and pronunciation. From

the 7th grade, the English lessons at school increased to four hours a week. Though the subjects have been studying English for five and half years, the actual time they spent on the English lessons is only 500 hours total, which amounts to approximately 20 days' exposure to the English language. Thus, the subjects can be classified as beginning learners.²⁾

The subjects were asked to provide their judgments on the grammaticality of sentences presented to them on a TV screen. The sentences were manipulated so that half of them were grammatical and half ungrammatical due to (in)application of S-Aux inversion. Some examples of grammatical and ungrammatical sentences used in the questionnaire are the following:

- (3) a. Grammatical sentences:
 What is Tom's job?
 Where do you eat lunch?
 How have you been?
 Why should I help Tom?
- b. Ungrammatical sentences:
 What Tom's hobby is?
 Where you eat lunch?
 How you have been?
 Why I should help Mary?

Using the Powerpoint program, the sentences were presented to the subjects one by one for 10 seconds each on a 30 inch TV screen. The subjects read the sentences and marked either correct or incorrect on the answer sheet. It took about 20 minutes for the subjects to complete the task.

The results of the data analysis show that the subjects' overall knowledge of S-Aux inversion in *wh*-questions is still developing, and hence not so stable. The correct judgment rates for the target *wh*-questions are:

(4) *what* : 63.6% *where* : 63.6% *how* : 63.3% *why* : 48.8%

2) The level of the learners was speculated based on the time the learners have spent on studying English. As a reviewer pointed out, an objective criterion to determine the learners' level would have increased the validity of the classification.

Though the subjects' correct response rates are low for all the *wh*-questions, they seem to have the most difficulty with *why*-questions, which have the lowest correct response rate of the four *wh*-question types. For example, about 72% of the subjects judged "Why Susan is unhappy?" as grammatical, while only 38% of the subjects judged "Why did Susan go?" as grammatical. The sentences in (5) with *what*, *where*, and *how* obtained the highest correct responses (over 80%):

- (5) What Tom's hobby is? (83%)
 Where is your school? (83%)
 What did you eat? (83%)
 How you will help him? (80%)
 How your friends are? (88%)

Van Valin (2002), within the framework of the Role and Reference Grammar (RRG), proposes an account of the gradual application of S-Aux inversion in L1 child English. According to RRG, illocutionary force in English is signaled by the tense bearing morpheme, which appears in the core (verb+arguments) initial position in interrogative sentences. Van Valin proposes that children initially place in the core-initial position only those auxiliaries which are explicitly tensed. Thus, S-Aux inversion will occur first in sentences which have *is*, *are*, *was*, *do*, *does*, *did*, *has*, and *had*, while other modal verbs will not appear in the core initial position at this stage. He further predicts that among modal auxiliary verbs, *can* and *could*, which have a clear tense opposition, will appear in the core-initial position before other modal verbs such as *will*, *would*, *shall*, and *should*.³⁾ Thus, according to van Valin, the gradual application of S-Aux inversion is due to the tensedness hierarchy among the auxiliary verbs.

I examined the L2 grammaticality judgment data in order to see whether van Valin's hypothesis is supported by L2 acquisition data. The following is the correct response rate for each auxiliary verb:

3) Van Valin suggests that *can* and *could* have a true tense opposition when used deontically (e.g. I can do it now (=I am able) vs. I could do it yesterday (=I was able)). This characteristic of *can/could* distinguishes them from other modals which do not have this property. Thus, *can/could* are higher than other modals in the 'tensedness' hierarchy.

- (6) a. Verbs high in tensesness hierarchy (60.7%):
be (are, is, am, were, was) : 65%
have (has) : 59.3%
do (does, did) : 57.8%
- b. Verbs low in tensesness hierarchy (58.2%):
can (could) : 56.8%
will (would) : 61.4%
should : 56.4%

It appears that the difference between the high tensesness verbs and the low tensesness verbs is not significant, except for *be*. Among the low tensesness verbs, the subjects' judgment on *can/could* is no better than on *will/should*, which contradicts van Valin's prediction in L1 acquisition.

In summary, it appears that both L1 and L2 learners of English have the special *why* rule constraint proposed by Labov and Labov (1978): "Invert after all *wh*-words except *why*." The question we want to investigate is why developing English grammars, both L1 and L2, have such a rule constraint and if there is any explanatory principle behind the descriptive rule. In the following section, I will review the Principles and Parameters (P&P) approach to *why*-questions, and then I will try to reinterpret Labov and Labov's rule within the Minimalist Program (MP) framework.

3. Previous Approaches to Why-questions

3.1. P&P Approaches to Why-questions

De Villiers (1991), noting the delayed application of S-Aux inversion in *wh*-adjunct questions, proposes some explanations. Her main proposals are: 1) Children initially have the option to generate *wh*-words in a topic position, adjoined to IP; thus, children's early *wh*-constructions may not involve movement. 2) A reanalysis takes place as children acquire embedded *wh*-sentences. After they notice that in the subcategorized *wh*-sentences, a *wh*-word is in fact in the Spec of CP, children reanalyze the main clause as CP. 3) In the case of adjunct *why*, the IP adjunction analysis persists for some time due to infrequent input. 4) Once the reanalysis is completed, Infl can now move into C(omp) position, and due

to the delayed reanalysis in the case of *why*, a gradual application of S-Aux inversion occurs.

Though this analysis nicely describes the delayed S-Aux inversion in adjunct questions, it raises some problems which need to be dealt with. First, as De Villiers herself also noted, this analysis, which relates the absence of a CP projection and non-inversion, cannot explain the fact that children use S-Aux inversion in *yes/no*-questions before they apply S-Aux inversion in *wh*-questions. This means that in *yes/no*-questions children already have the CP projection, and the auxiliary verb moves into the C position. The question is, then, why do children not use the C position as a landing site for auxiliary verb in *wh*-questions if they already have a CP projection available?

Another problem with this analysis is related to the motivation for S-Aux inversion and *wh*-movement. Based on the assumption that the [+wh] feature is located in the Infl, Rizzi (1996) proposes that:

The application of I-to-C movement in this and other similar cases is enforced in order to satisfy the *Wh*-Criterion, a general well-formedness condition on *wh*-structures, which is also ultimately responsible for the SS distribution and LF interpretation *wh*-operators (p. 64).

The *Wh*-Criterion

- A. A *wh*-operator must be in a spec-head configuration with X[+wh]
- B. An X [+wh] must be in a spec-head configuration with a *wh*-operator.

The *Wh*-Criterion can apply at different levels, either SS or LF, and there are four options out of which languages can choose: 1) Both A and B apply at SS, 2) Both A and B hold at LF, 3) A holds at SS, and B at LF, and 4) A applies at LF and B at SS. English selects option 4, which requires only one *wh*-phrase to move at SS, while *wh*-in-situ languages like Korean choose option 2, which does not allow *wh*-movement at SS. If the *Wh*-Criterion is a UG principle, as is claimed by May (1985), Lasnik & Saito (1984), and Rizzi (1996), and the four options are parameters, then what children need to learn is which option of the four their L1 selects. English speaking children need to learn that their language chooses option 4, while Korean children need to decide that their language selects option 2, based on the linguistic input they receive.

L1 English acquisition data, however, does not seem to support the prediction of the *Wh*-Criterion. An English speaking child goes through a

stage at which she applies S-Aux inversion in *what*-, *where*-, and *how*-questions, but not in *why*-questions. The question is how to explain the violation of the *Wh*-Criterion by *why* and why *why* violates the *Wh*-Criterion.

The fact that the *Wh*-Criterion is not observed by all *wh*-words even in adult grammar is noted in Spanish. Observing that *en que medida* (in what way), *por que* (why), *cuando* (when), and *como* (how) do not require S-Aux inversion, Torrego (1984) states:

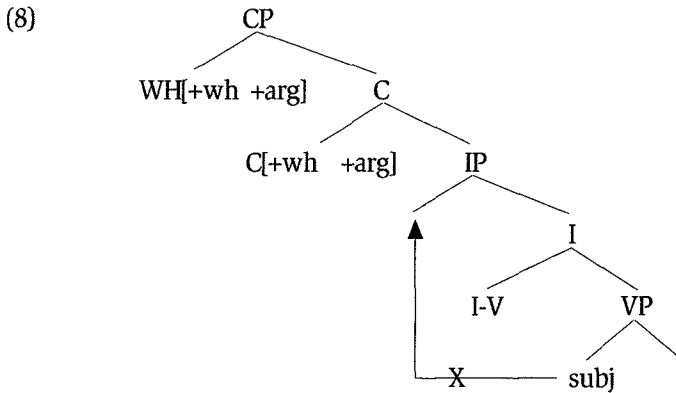
Wh-phrases that require inversion are the thematic arguments of the verb and the subjects of S (that is, external and internal arguments, in the sense of Williams (1980) and Marantz (1981)). (p. 106)

Suñer (1994) proposes the Argumental Agreement Licensing constraint, which is a language specific condition, in order to account for the argument/adjunct asymmetry in Spanish with regard to S-Aux inversion.

(7) Argumental Agreement Licensing (AAL)

- a. Argument *wh*-phrases must be licensed through symmetric Arg-Agreement between $\alpha(\text{spec C})$ and $\beta(\text{C})$.
- b. β Arg-agrees with $v(=V)$ only if β and v are Arg-marked and no other Arg-marked element is closer to v .

AAL accounts for the argumental-*wh*+V+S order in the following way: Argumental *wh*-phrases have the feature [+Arg(mental)], and by a spec-head agreement, C will also have this feature, thus C[+wh, + Arg]. The selected feature [+Arg] of C needs to be licensed by the predicate in Infl, which requires a strict locality condition; thus, no other argumental category may occur between C and V in Infl. This prevents the subject from raising to [spec, IP].



Adjunct *wh*-phrases are [-Arg], and no Arg-agreement is possible between C and V in Infl. Therefore, subject can occur between *wh* and V, and the [wh+ S +V] order is obtained. The AAL may explain the argument/adjunct asymmetry, but it cannot explain why it is only *why* among other adjuncts that occurs in the [wh+S+V] order in the developing grammars of English, both L1 and L2. This approach also cannot account for the intralanguage variation with regard to S-Aux inversion and the adjunct/argument asymmetry. In his survey of dialects in Spanish, Bakovic (1996) found that S-Aux inversion shows great variation among dialects: some dialects apply S-Aux inversion only in argument *wh*-questions, while there are dialects that allow S-Aux inversion in argument *wh*-questions and manner adjunct questions, while others invert S-Aux in all types of *wh*-questions. It is not clear how Suñer's AAL, which distinguishes only arguments and adjuncts, will account for this kind of variation.

Rizzi (1996) is another attempt to explain the non-inversion phenomenon. In French, *wh*-movement and S-Aux inversion are both optional, as shown by the following examples:

- (9) a. Elle est partie a quelle heure?
 She is left at what time
 b. A quelle heure elle est partie?
 At what time she is left
 c. A quelle heure est-elle partie?
 At what time has she left?

In order to account for this kind of optionality, which seems to violate

the *Wh*-Criterion, Rizzi (1996) proposes that French has an extra mechanism to satisfy the *Wh*-Criterion, which he calls Dynamic Agreement:

- (10) Dynamic Agreement
 Wh-Op X \Rightarrow Wh-Op X [+wh]

According to this mechanism, the head C can inherit the [+wh] feature from the *wh*-phrase in [spec, CP]. Consequently, the *Wh*-Criterion is satisfied and no finite verb movement to C is necessary. Dynamic Agreement may occur in SS (b) or at LF (a), and the *Wh*-Criterion is satisfied in SS and at LF, respectively. A problem of the analysis which adopts the Dynamic Agreement rule is that it cannot explain the optional V/I movement to C in French. For example, in (9c) above, repeated here as (11), S-Aux inversion is possible and the result is grammatical:

- (11) A quelle heure est-elle partie?
 At what time has she left?

In this sentence, it is not clear what motivates the V/I to C movement if Dynamic Agreement is available in French. Dynamic Agreement also cannot explain the argument/adjunct asymmetry in Spanish and the delayed application of S-Aux inversion in L1 and L2 acquisition data. If we assume that *why* in non-inversion sentences is licensed via Dynamic Agreement, then the question which still needs to be answered is: what property of *why* makes children apply Dynamic Agreement only to *why*-questions?

3.2. An MP Approach to Why-questions

The Minimalist Program (MP) approach to *why*-questions faces problems similar to the P&P approach. The *Wh*-Criterion of P&P has not changed much in MP except that the spec-head configuration between the *wh*-operator and C[+wh] is required for feature checking. In MP, languages consist of a lexicon and a series of computational operations. Sentences are built up in the process of moving elements from the lexical domain to the positions in which their morphological features can be checked against a projection of a functional category. The features can be strong or weak, and this is the locus of typological variation in MP. The four

options allowed by the *Wh*-Criterion can now be interpreted in terms of feature strength. In English, the [+wh] feature of I(nfl) is strong and needs to be checked before Spell-out. The I(nfl) together with its [+wh] feature moves to C and a *wh*-word also moves to the spec of CP in order to form the spec-head configuration to check the [+wh] feature. In Korean-type languages, I(nfl) has a weak [+wh] feature, so both I(nfl) and *wh*-phrases do not move overtly in order to obey the Principle of Economy, since overt movement is considered to be less economical. Considering the binary strength of features, which is assumed to apply to the category of *wh*-phrases as a whole, we can predict that MP will also fail to account for the delayed application of S-Aux inversion in *why*-questions: if the [+wh] feature of I(nfl) is strong in English and needs to move to C before Spell-out, why does it not move in *why*-questions? And why does *why* move to the spec of CP when there is no [+wh] feature to check against, in violation of the Principle of Economy?

Roeper (1994), noting the characteristics of early grammars, suggests that the developing grammar can be explained by the merger theory of Chomsky (1995). The main claim of Roeper (1994) is that there are lexically defined stages during L1 acquisition, at which maximal projections are built up through merger alone without a checking operation via movement. Roeper notes the problem with gradual S-Aux inversion in *wh*-questions:

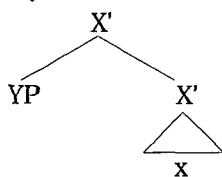
If children (a) have CP, and (b) have a full range of lexical items for *wh*-, then why would they not insert this range of lexical items into CP immediately? If we assume that they must be in CP, then we have no explanation for the fact that inversion occurs with some, but not with other *wh*-words. (p. 428)

As a solution to this problem, Roeper proposes that children have another method for achieving the meaning of a matrix question: that is, merger of *what* and IP, *how* and IP, *where* and IP, and *why* and IP without feature checking. In this system, each *wh*-word subcategorizes for the IP. Since the subcategorization is lexicon specific, nothing forces a full simultaneous re-analysis of all *wh*-words as occupying the [spec, CP] position. Item by item re-analysis is possible, hence the gradual application of S-Aux inversion appears. Then, what prevents the projection of CP when a *wh*-word is merged with IP? Roeper suggests, based on experimental studies, that *wh*-words in a child grammar may be different from

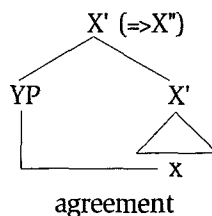
those in an adult grammar; that is, in adult language a *wh*-word functions as a variable, but in a child grammar it is considered a null constant, thus child *wh*-questions do not have a variable force. The assumption behind Roeper's approach is that children have a different grammar than adults, and their question sentences have different meanings from those of adults. Then, Roeper faces the perennial question which haunts the Discontinuity Hypothesis: why should a child grammar be different from an adult grammar, and what triggers the change from the early grammar to the adult grammar?

Another possible approach to the *why*-question within the MP framework would be to make use of the nullification of the specifier/adjunction distinction, which was proposed by Kayne (1994), Fukui (1995), Fukui and Saito (1997). The basic idea proposed by Fukui and Saito (1997) is: 1) all movement involves adjunction of the moved phrase and 2) when an adjoined phrase agrees with a head, it closes off the projection, and becomes a specifier. The difference between what is traditionally called substitution and adjunction can be schematized as in (a) and (b) in Fukui and Saito's theory:

(12) (a) Adjunction



(b) Substitution



The main purpose of Fukui and Saito's new proposal is to solve the puzzle of scrambling, a paradigm case of optional movement and thus a threat to the Principle of Economy. Adjunction is, according to Fukui and Saito, a process of structure building, hence it does not require any motivation to move. If scrambling is analyzed as an adjunction, it is the same as other structure building processes which select two items and merge them. The process is costless, and the puzzle of scrambling is solved without violating the Principle of Economy.

Another advantage of Fukui and Saito's approach is that it can account for the multiple subject construction in Japanese-Korean type languages. When a subject is raised from Spec of VP and adjoins I, it closes off the I

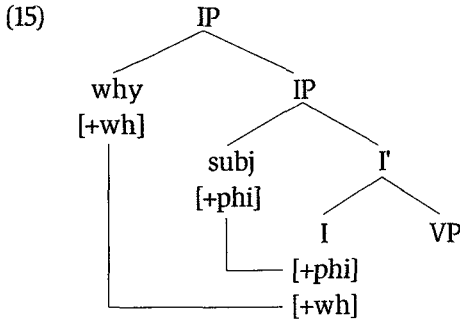
projection as IP in languages where subject agrees with Infl, and the adjoined subject becomes the specifier of the IP projection. In languages where there is no agreement between subject and Infl, such as Japanese, as argued by Kuroda (1988) and Fukui (1995), multiple adjunction of subject to I is possible since the adjunction does not close off the I projection. The nominative case is assigned by a default rule and the multiple nominative case construction is allowed:

- (13) a. Seoul-i chiptul-i chipung-i nop-ta.
 Seoul-nom houses-nom roof-nom high-dec.
 ‘In Seoul, the roof of houses are high.’
 b. Mary-ka apechi-ka ko-ka nal-i kot-ta.
 Mary-nom father-nom nose-nom line-nom straight-dec.
 ‘Mary’s father has a straight nose.’

Now, let us consider if the nullification of the specifier/adjunction distinction can account for the non-inversion of S-Aux in *why*-questions. De Villiers (1991) suggested that *why* is adjoined to IP when S-Aux is not inverted. I have pointed out that the IP adjunction configuration is problematic within the feature checking theory since feature checking is assumed to be possible only in a spec-head or head-head configuration. Let us see if the IP-adjoined position can be analyzed as a specifier position within Fukui and Saito’s (1997) approach. To be a specifier, agreement with a head is necessary. If we assume, following Rizzi (1996), that Infl has a [+wh] feature in matrix sentences in English, then we could argue that Infl has both *phi*-features and the [+wh] feature. The *phi*-features of Infl are checked against those of the subject, and the [+wh] feature of Infl is checked against that of *why*. In order to allow this mechanism, it is necessary to loosen the restrictions on agreement and phrase structure:

- (14) a. Instead of the widely accepted assumption that agreement is a one-to-one relation, if we allow a one-to-many relation when the head has multiple features, the adjoined *why* can be analyzed as a specifier.
 b. Kayne’s (1994) Linear Correspondence Axiom (LCA) approach permits only one adjunction for each projection. The adoption of a one-to-many agreement relation makes it necessary to allow multiple adjunction.

The following is the structure in which the [+wh] feature of *why* is checked against the [+wh] feature of I(nfl) in the spec-head configuration:



If we adopt Fukui and Saito's (1997) theory, which does not distinguish between substitution and adjunction, with the loosening of Kayne's (1994) LCA, it seems possible to explain the non-inversion in *why*-questions within the feature checking theory. However, the question that still remains is: *why* do children exploit this mechanism only in *why*-questions?

4. An Alternative Analysis

I propose that the non-inversion of S-Aux in *why*-questions results from a special morphological property of *why*; thus, the idiosyncratic behavior of *why* should be explained based on its internal morphological structure, not by syntactic factors. A weakness of the purely syntactic approach to the *why*-question can be seen if we compare *how*- and *why*- questions. It is well known that *wh*-phrases behave differently depending on whether they are complements or non-complements. In multiple *wh*-questions, *who* and *what* can remain in-situ contrast to *why* and *how*:

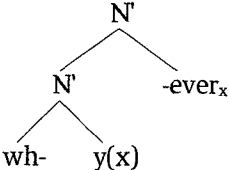
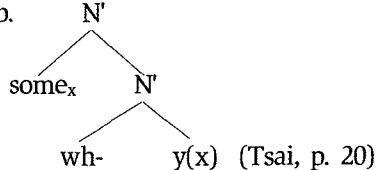
- (16) a. Who bought what?
 b. What did you buy for whom?
 c. *Who came why?
 d. *Who came how?

The ungrammaticality of (c) and (d) is explained in the P&P model by an

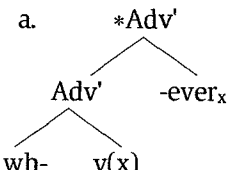
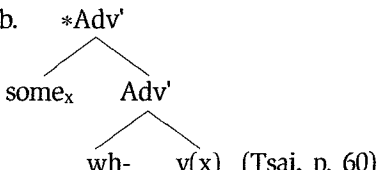
ECP violation: *why* and *how* move at LF and adjoin to *who* for scope reasons. The traces left behind do not satisfy the proper government condition. They are not *theta*-governed by the verb because they are not complements of the verb. They cannot also be governed by the antecedent in the Comp because the Comp has the index of *who* which has occupied the Comp position before *why* and *how*.

It seems that *how* and *why* belong to the same group with regard to their syntactic movement. Then, why does *why* behave differently from *how* with regard to S-Aux inversion in developing grammars, both in L1 and L2? As I have already pointed out, children begin to apply S-Aux inversion in *how*-questions much earlier than in *why*-questions. I propose, following Tsai (1994), who argues that *wh*-phrases vary in their internal structures not only across languages but also across categories, that the different inversion pattern results from the different internal structure of *wh*-phrases.

Tsai (1994) argues that nominal *wh*-phrases have a different internal structure than adverbial *wh*-phrases. For example, *what*, *who*, *when*, and *where* can be combined with *-ever* or *some-* (*what-ever*, *some-what*). The proposed internal structure of the nominal *wh*-phrases are:

- (17) a.  b.  (Tsai, p. 20)

According to Tsai, nominal *wh*-phrases are subject to binding construals and can be bound by *-ever* or *some-*. On the other hand, adverbial *wh*-phrases do not allow binding from *-ever* and *some-*, which is illustrated below:

- (18) a.  b.  (Tsai, p. 60)

However, *how* and *why* seem to differ from each other with respect to

PRO to be ungoverned. The following contrast in grammaticality may also be explained in the same way:

- (22) a. I dont know when [PRO to go]
 b. I dont know how [PRO to go]
 c. *I dont know why [PRO to go]

In the case of *when* and *how*, since they are XP categories, they are in [spec, CP]. The head C is not occupied by any lexical item, and PRO is not governed; thus, the two sentences are grammatical. The ungrammaticality of the sentence with *why* leads us to assume that *why* in this case is in the C position as an X category and governs into the embedded clause, resulting in a violation of the PRO Theorem. Thus, I propose that *why* in the matrix clause is an XP category, while *why* in the embedded infinitival clause is an X category.⁴⁾

The proposal that a category can be either X or XP is not new or ad hoc. Chomsky (1995) suggests that clitics in the Romance languages can be both X and XP categories. That is, a clitic which is a complement of a verb moves from its base-generated position and adjoins to the verb or a head of a functional projection above the verb. Since it is a complement of a verb, the clitic should be an XP category. However, the fact that it can adjoin to a head means that it is also an X-level category. *Why* seems to be another instance which supports the dual status of a category as X/XP.

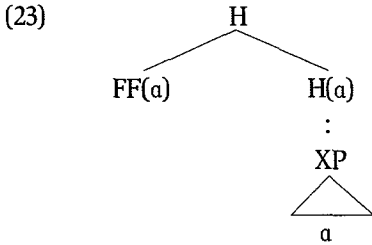
Let us consider how the X/XP category *why* can get its [+wh] feature checked. I propose that *why*-questions can be accounted for if we assume: 1) feature checking occurs only in the head-head configuration, and 2) when a category moves overtly, it has to be within the minimal domain of the head against which the feature of the moved category is checked

4) Some native speakers judge the following sentences grammatical, while others ungrammatical:

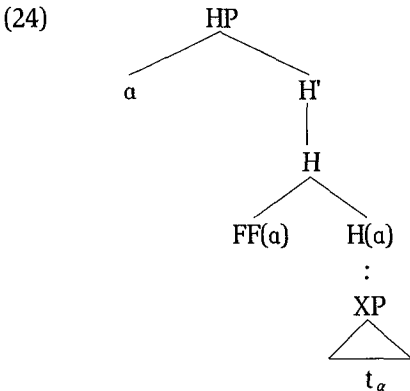
- 1) If you ask yourself why to learn English...
- 2) Some ask when to use it and some ask why to use it.

According to the theory I propose in this paper, the variation in native speakers' judgments can be attributed to the dual status of *why* as an X or XP category: that is, though *why* in the embedded clause is an X category, some speakers might analyze it as an XP category. At this stage, however, my proposal is very speculative. As anonymous reviewers pointed out, more research is needed to support the classification of *why* as an X or XP category based on the position in the sentence. I leave this for future study.

(Chomsky, 1995; Fukui & Takano, 1997). Chomsky (1995) suggests that all movement for checking purposes, whether it is overt or covert movement, involves movement of formal features. In the following structure, the head H has some feature to be checked and *a* has the same feature as the head H. In order to get its feature checked, H attracts the formal feature of *a*, FF(*a*), and adjoins it to itself.

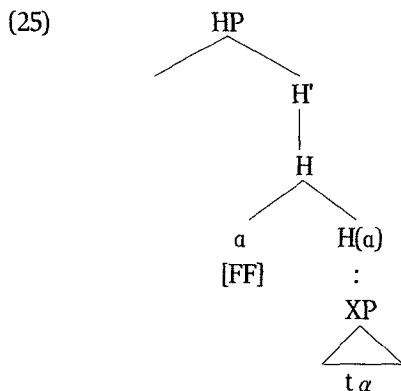


When the movement is covert, nothing further is required. However, according to Chomsky, when the movement is overt, the overt category has to be within the minimal domain of H to make the feature chain shorter. If *a* is not within the minimal feature checking domain, the PF component cannot interpret the chain and the derivation crashes. The overt movement of *a* into the minimal feature checking domain of H results in the following structure, where H is projected into HP and *a* moves to the Spec of HP:



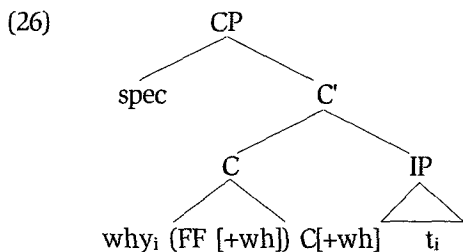
Fukui and Takano (1997) propose that the above structure is created whenever feature checking occurs, whether the moved element *a* is X or

XP. I diverge from Fukui and Takano's approach and assume that the above structure is obtained only in the case of XP-movement. When an X category moves, it is adjoined to H together with its formal features, as shown in (25):

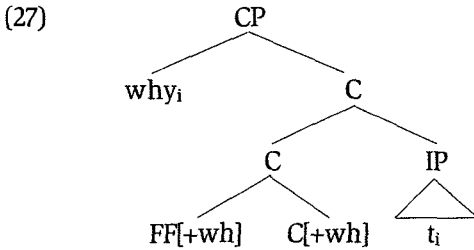


My proposal is to preserve the condition on the uniformity of a chain. If a head (X) moves to the spec of HP position, it is a movement from an X to an XP position, which would break the uniformity of the chain, since the head of the chain is an XP level and the tail of the chain is an X level.

Let us look at how the feature checking of *why* works in our approach. When *why* moves to get its [+wh] feature checked, it has two options. First, in the embedded clause the X-level status of *why* allows it to adjoin to C together with its [+wh] feature and the [+wh] feature is checked against the [+wh] feature of C. In this case S-Aux inversion does not occur because C now has a morphological element to attach its feature to. Italian and some Spanish dialects which do not invert S-Aux for *why*-questions may choose this option:



Second, when *why* functions as an XP category, the [+wh] feature of *why* adjoins to C. However, *why* as an XP category cannot adjoin C, and moves into [spec, CP] in order to be in the minimal domain of the head C and make the feature chain shorter for PF convergence (cf. Chomsky, 1995; Fukui & Takano, 1997). In this case the empty C, which needs a morphological element to attach its feature to, triggers S-Aux inversion:



In the early stages, English speaking children may analyze all the *wh*-words as X level categories and adjoin them to C because children have a tendency to hypothesize minimal word structure as the unmarked case. Thus, in the earliest stage of language acquisition, children do not show any S-Aux inversion. However, as they acquire embedded clauses such as “I dont know what to do” or “I dont know where to go”, they may begin to reanalyze the *wh*-words as XP level categories and move them to the spec of CP. However, in the case of *why*, the period in which the children analyze *why* in the matrix clause as an X level category persists longer, possibly due to the absence of triggers for the reanalysis in the input.⁵ It may take a while before children reanalyze *why* in matrix questions as an XP, which may start after they notice S-Aux inversion in *why*-questions.⁶

5) Van Valin (2002) suggests an explanation for the late S-Aux inversion in *why*-questions based on the semantic nature of *why*, which is distinct from other *wh*-words. Consider the following dialogue:

Adult: Mommy went to the store.

Child: Why?

Adult: Mommy went to the store, because she needs to get some food for dinner.

According to van Valin, the child's utterance ‘*why?*’ can be interpreted as ‘*why*+{previous sentence] (=Why Mommy went to the store?). That is, children may expand the utterance *why?* by simply appending a previous speaker's utterance. This kind of interpretation is not possible for other *wh*-questions and van Valin speculates that this may be one of the causes for the late S-Aux inversion in *why*-questions.

5. Summary and Conclusion

In developing grammars, both L1 and L2, it has been observed that S-Aux inversion is acquired gradually, beginning with *wh*-argument questions, spreading to *wh*-adjunct questions, and finally in *why*-questions. In this paper, two possible approaches to the delayed S-Aux inversion in *why*-questions have been considered. One is based on the feature checking mechanism of MP, and the other based on the morphological characteristics of *why*. The feature checking approach, which is based on the binary strength of features as strong and weak, faces a problem in accounting for the gradual S-Aux inversion. The morphological analysis, which assumes that *why* functions as both X and XP-level categories, appears promising in explaining the developmental pattern of *why*-questions.

6) Pesetsky (1997) notes that in Japanese *naze* (why) behaves differently from other *wh*-words.

- (1) *? Hanako-sika doko-e ik-ana-i no?
 Hanako-only where-to go-neg-pres Q
 'Where does only Hanako not go?'
 (2) Hanako-sika naze ik-ana-i no?
 Hanako-only why go-neg-pres Q
 'Why does only Hanako not go?'

He suggests that *naze* patterns with quantifiers rather than with *wh*-phrases, and adjoins to IP rather than undergoing *wh*-movement. The Korean translation of the above examples shows the same grammaticality:

- (3) *? Mary-pakkey eti-ey an-kani?
 Mary-only where-to not-go -Q?
 'Why does only Mary not go?'
 (4) Mary-pakkey way an-kani?
 Mary-only why not-go-Q?
 'Why does only Mary not go?'

The Negative Polarity Item (NPI) *pakkey* needs be licensed by negation *an* (not). When a *wh*-word occurs between an NPI and the negative morpheme, it seems to interfere with the licensing, except for *way* (why). Instead of Pesetsky's *why*-as-a-quantifier approach, this phenomenon could be explained in the following way based on *why* as an X-level category: it has been proposed that in Korean the [+neg] feature of an NPI needs to be checked against the [+neg] feature of the negation head *an* in a spec-head configuration. When the NPI moves at LF, a *wh*-phrase, which is an XP category and in the spec position, interferes with the movement, so that the NPI cannot be licensed. On the other hand, if we assume that *why* in Korean is an X category, it does not interfere with the NPI movement and the sentence is grammatical.

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Hyeson Park
 English Department/Linguistics Program
 University of South Carolina
 Columbia, SC 29208 U.S.A.
 E-mail: parkhy@gwm.sc.edu

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