Negative Islands in Language Acquisition

Lamya Abdulkarim , Thomas Roeper and Jill de Villiers

I. Introduction

Modern linguistic research has two problems: 1) intuitional judgements are not alway clear and do not always match the sublte predictions made by theory , and 2) the distinction between semantics and syntax becomes increasingly obscure.   Acquisition data has traditionally been seen as undermined by "performance" factors, but the results of twenty years of research has revealed that acquisition data can be as subtle as intuitional data.

Now the aquestion arises: can acquisition data offer unique insights into linguistic ability. Two factors suggest that this is possible: 1) the time course of acquisition can reveal which factors belong together, and 2) the large amount of data, drawn from responses to contextually natural stories allows us to see effects that may be beyond any kind of sharp intuition.

In *Relativized Minimality* (Rizzi, 1990), Rizzi (1990;1992) proposed that negatives and Wh-words are barriers to long distance (LD) movement of adjunct WH words. Under minimalism, each movement step ha to satisfy locality condition for its wh-type. Adjunct wh-words must move through the Spec of all adjunct phrases. If negation is an adjunct phrase, then the wh-word must move through its Spec. Therefore we predict the ungrammaticality of these sentences:

(1) a. *Why don't you think [t' [we can help him]]? (Rizzi, 1990: p. 83 (22))

b. *How do you wonder [whether [we believe [(t') [we can help Bill t]]]]

(Rizzi, 1990: p. 95 (45))

If there is no trace in all theinteremediate Adjunct-Spec positions, including Neg-P, then the sentence woulc have an improperly governed trace at the end of the chain, which violates the Empty Category Principle (ECP). In sentence (1a), for example, the WH *why* cannot be extracted from the lower clause (i.e. to construct Why-can help) because of the negative island effect induced by *n't* in *don't..* Similarly, in sentenc (1b) the WH island *whether* blocks linking the WH *how* to a lower trace.   In what follows, we review the results on the WH island study in child grammar before we present the negative island data.

II. WH island in child language

deVilliers, Roeper, and Vainikka (1990) showed WH island effects in English child grammar. In Table 1, where only the adjunct examples are shown, long distance movement was clearly blocked for (4&5) in contrast to (3) where there is no medial WH word. Responses reflected either short distance or what is called partial WH movement: answering the medial wh-word.

There are two modern approaches to scope-marking: one is that there is invisible movement at LF which links the medial wh- with an initial scope-marker (see McDaniel (1989) and von Stechow (1996)). This holds in German where the answers must have scope over a higher verb (2) . The second approach is where there is no true subordination and the whole second clause (CP) is co-indexed with a scope marker in the first CP. (See Dayal ( ) and Abdul-karim (in prep) for discussion).

In (2), for example, the question in German is "with whom Jakob is talking" with the medial WH word having the wide scope without moving to the matrix clause.

(2) Was_i glaubt [$_{IP}$ Hans [$_{CP}$ [mit wem]$_i$ [$_{IP}$ Jakob jetzt t_i spricht]]]?
  WHAT does Hans believe with whom Jakob is now talking?

The results of the initial work on wh-partial movement are presented here:

Table 1. WH island effects on the extraction of adjunct WH words (SD=short distance; LD=long distance PM=partial WH movement) (N= 25; age: 3.7 to 6.8 year olds)

The Sentence	SD	LD	PM
3. When did the boy say he hurt himslef? (Adjunct - 0)	50% (When-say)	44% (When-hurt)	NA
4. How did the girl ask who to paint? (Adjunct - argument)	23% (How-ask)	8% (How-paint)	68% (Who-paint)
5. When did the clown say how he caught the ball? (Adjunct - adjunct)	48% (When-say)	6% (When-caught)	40% (How-caught)

Children answer the medial wh- for both arguments (what, who) and adjuncts (how, when) roughly 50% of the time. The amount of partial movement that children give varies among the questions for a variety of interesting reasons: the content of the wh-word, the nature of the stories, and the semantics involved all contribute to children's choices. For instance, the referentiality of arguments, and the fact that they invoke

contrast set, may be important . Likewise, the non-central nature of adjuncts in the Discourse may explain the presence of fewer adjunct-medial responses.   Nonetheless the overall phenomenon is solidly demonstrated.   Both arguments and adjunct wh-words create barriers.

A third important phenomenon is <u>copying</u> where the identical word appears in both positions. Copying can be seen as another form of partial movement or as the spell-out of a trace for long-distance movement (see de Villiers et al, and Thornton (1989), and Höhle (   )). Such case are like:

(x) why_1 did John say why_2 he can play

(See Roeper (1993) "The Least Effort Principle in Child Grammar: Choosing a Marked Parameter in E. Reuland and W. Abraham (Kluwer (1993) p. 71-104.
From our point of view, the crucial question is whether children will treat (x) as if <u>why_2</u> undergoes movement to <u>why_1</u>.

We include the copying condition to see if the copy and non-copy cases behave the same and hence chain of move and copy in the medial Spec,CP underlies children's strategy of long distance WH movemen In production data, for example, children allow copying of the medial WH word as in (8) (e.g. Thornton,1990)

(8) <u>What</u> did she say <u>what</u> she wanted. (Roeper, pc.)

Copying movement to the matrix clause seems an overt version of what partial movement is as (9) shows.

(9) a. Was_i meinst du [$_{CP}$ wen_i (da) sie wirklich t_i liebt?]
       [+Wh] think you who_{Acc} (that) she really loves?
    b. Wen_i meinst du [$_{CP}$ wen_i (da) sie wirklich t_i liebt?]
       Wh_{Acc} think you who_{Acc} (that) she really loves?

Now we are in a position to make new hypotheses.   First, under the view that negatives are adjuncts, we argue:

Hypothesis: Negative-phrases are barriers to Lond-distance movement.
Second, under the prediciton that copying entails a movement at LF, we predict:

Negatives are barriers to copied wh-words.
Experimentally these predictions arise:

a. negatives will force short answers for long-distance movement
b. negatives will force short answers for partial movement or copying.

Prediction (b) follows precisely if we assume that there is LF-movement involved in partial movement.This is the focus of our experiment. The predictions are the same for Standard English, African-American English, and Arabic.

III. The negative island experiment

3.1 **Method**

Participants. A total of 67 participated in the study. They ranged from 3.3 to 5 year old children of whom 27 speak Standard American English, 10 speak African American English and 9 speak Arabic. There were also 21 Standard American English speaking adults for a control group and for purposes of comparisons with the children's performance.

Materials. Twelve counterbalanced stories with either a positive or negative versions. In the positive (3), the short distance answer to the*why* -question in (6a&b) is "because his sister asked him how he got clean". Another reason is the long distance answer, "because he was dirty". In the negative version (7), a possible short distance answer for the negative question in (7a&b) is "because his mother was sleeping" besides the long distance reason as in (6).

(6) **A positive version story**

This little boy got covered with mud while playing outside with his sister. He took a bath because he was dirty and he had to get clean. His sister saw him afterwards and said: "You were so dirty. What happened?" He said: " I took a bath because I was dirty."
a. Why did the boy say he took a bath?
OR   b. Why did the boy say why he took a bath?

(7) **A negative version story**

This little boy got covered with mud while playing outside with his sister. He took a bath because he was dirty and he had to get clean. He didn't tell his Mom he took a bath because she was sleeping in her bedroom.
a. Why did the boy not tell his Mom he took a bath?
OR   b. Why did the boy not tell his Mom why he took a bath?
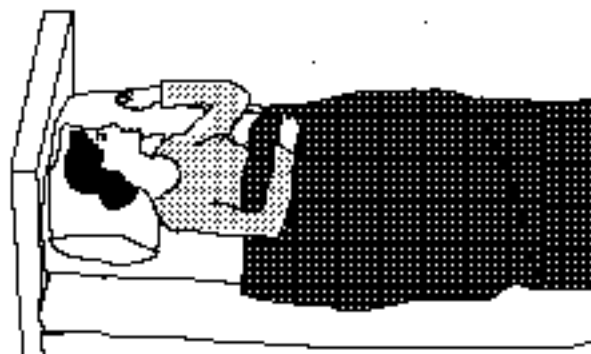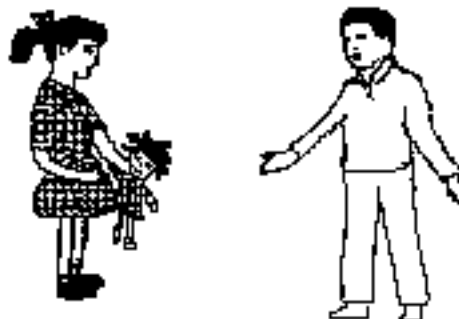
Half of the WH questions contained a medial WH copy as in (6b&7b).Whereas most adults if they look closely at (6b&7b) they would treat them as indirect questions, in actuality they treat them as long distance movement.

3.2 **Results**

Negative island effects appeared both in child and adult grammars. In Table 2, all groups showed more short distance answers to the negative than the declarative questions; within subjects effects were significantly different (F=72; p=.000). No main effect for age was found (p=.43). There was also no main effect for the adult and child group (p=.28).

Table 2. Results on negative island effects for children and adults (LD=long distance movement; SD=short distance movement)

Age	Why (6a)		Why Copying (6b)		Why Neg (7a)		Why Neg Copying (7b)	
	LD	SD	LD	SD	LD	SD	LD	SD
3 (N=6)	69.4%	30.5%	88.9%	11.1%	38.9%	61%	5.6%	94.4%
4 (N=9)	92.6%	7.4%	96.3%	3.7%	14.8%	85.2%	14.8%	85.2%

5 (N=17)	96%	3.9%	95%	4.9%	7.8%	92%	15.7%	84.3%
Adults(N=21)	88.9%	11%	73%	27%	0%	100%	0%	100%
Arabic								
4 (N=3)	88.9%	11%	100%	0%	11%	88.9%	38.9%	61%
5 (N=6)	88.9%	11%	83.3%	16.7%	11%	88.9%	25%	75%

Negative island showed similar crosslinguistic effects. There was no main effect for the Standard or African American English dialect among the 5 year olds (p=.39); hence data was joined. There was also no main language effect for the English and Arabic 4 and 5 year olds (p=.14). There was, however, significant interaction effect between the WH conditions and language in the English/Arabic case (F=2.26; p=.o3) which became not significant when corrected by Greenhouse-Geisser Epsilon (p=.08). The means of the SI answers to the negative questions were higher for English than Arabic. In general the data provides further evidence that children obey syntactic constraints on LD movement.

In the data, there were no significant differences between the copy and non-copy declarative questions. No significant differences were also found for the negative copy and non-copy questions indicating that a medial *why* behaves like a trace in LD questions (i.e. 6a&b are syntactically identical). The copy and noncopy sentences behave the same: both have LD movement without negatives and both are blocked by negatives. Children seem to use the WH copy as a LD strategy. The fact that adults also get LI on copy-sentences may reflect an option in UG which is available to the child in the initial stages and the adult in substandard speech (see Roeper (1993), and de Villiers, Roeper & Vainikka, 1990). These are the basic results of this range of experiments.

The data, however, is open to some more refined anlaysis. Whle Negative island in the non-copy WH questions (7a) was predicted from age (b=14; p=.03) for the English speaking children, there is a linear decline of LD answers. An age effect was also found for the non-copy affirmative questions (b=14; p=.01). LD answers are linearly increasing. One possible reason is that the lack of the copy makes it harder for the younger children to process the long distance chain (Dickey, pc.).

According to Rizzi (1990, 1992), WH islands and negative islands receive a unified syntactic account. We have seen that the behavior of WH islands showed island effects similar to the negative island. Why do younger children seem to block less? One possibility is that they group all wh-words together at first, assuming that they are arguments. Another possibility is that the negative phrase might start as an adjunct in child grammar, and once it is analyzed as a fully projected negative phrase (NegP) headed by *not* children become sensitive to negative islands. (See Lebeaux (1988), Hoekstra and Jordens (1992), Roeper (1996).

It is always valuable to project the final stage of acquisition. Here, of course, one is making a logical projection and not a data-driven analysis. One question which has never received a satisfactory answer is thi

How does the English speaking child
eliminate partial and LD movements?

We will address the question from the new perspective offered by Rizzi's theory of Split CP's.
Rizzi (1996) proposes that there is a series of split-CP positions, which exhibit some language variations. In
(10), there are different positions in CP for different syntactic elements. In the tree diagram, it is shown how
a child would construe a WH chain in comparison to an adult chain. Each position has different properties.
Crucially one difference stands out:

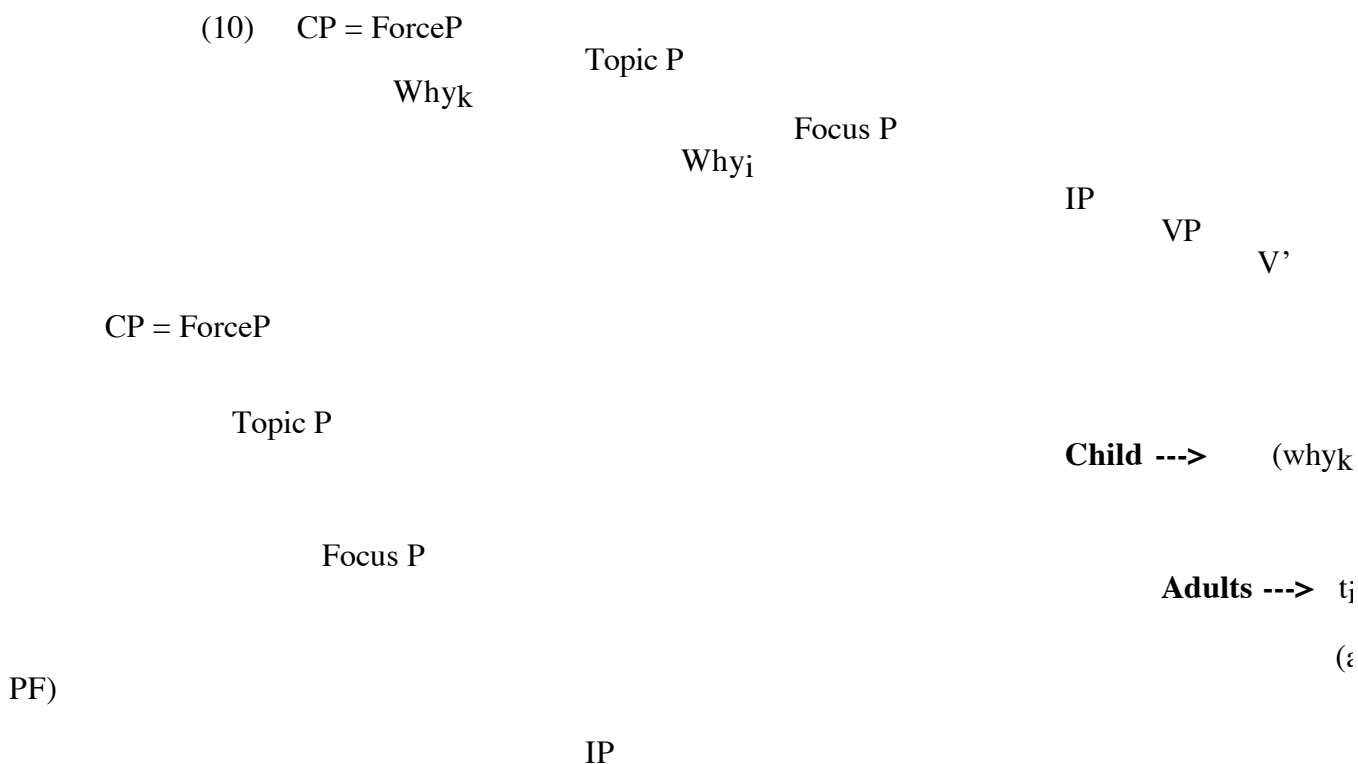   Topic phrase is not quantificational

      Focus phrase is quantificational .

The Focus phrase hosts quantificational operators, as in the sentence:

      John said that only milk would he eat

The <u>only</u> introduces a contrast set.

      Suppose that, in the child grammar, unlike adult grammar, a WH phrase occupies a Topic phrase. In
addition, initially, the wh-phrase may lack quaantificatinal force. This speculation is compatible with partial
movement (PM).   The wh-phrase is linked to a Topic phrase and then co-indexed with a matrix scope-
marker.

(10)   CP = ForceP

                   Topic P

           Why$_k$

                        Focus P

                  Why$_i$

                            IP

                              VP

                                 V'

CP = ForceP

      Topic P

                                    Child --->   (why$_k$

        Focus P

                                    Adults ---> t$_j$

                                       (

PF)

                    IP

$$t_{i/k}$$

A chain for a child and an adult would look like the following:

Child ==> Wh$_k$ ----- Wh$_k$ ---- t$_k$
Adult ==> Wh$_i$ ----- t$_i$ ---- t$_i$

If the child initially moves a WH word to a position not directly head-governed by the higher verb, such as t the Topic phrase, then copying without deletion may occur at PF (under the copy and delete approach to transformations (Chomsky, 1993). After copying, binding can be achieved by coindexation. This makes partial movement like resumptive pronouns. This resumptive pronoun strategy has also been suggested by Perez (1993) and Penner (1996) in embedded clauses until age 4 where a WH word is linked to a base-generated null resumptive pronoun.

Then at some point a new factor enters the grammar:

Trigger: Quantification and quantificational operators are triggered.

This process may play a crucial role in wh- acquisition, but involve a totally different range of quantification data. We shall not review how quantification emerges. There are many intriguing possibilities. Here we just assume its effect. When quantification appears, we predict that WH copying disappears before Partial Movement (Thornton, 1990) due to the fact that a WH phrase moves to a quantificational position in the matrix clause and hence can binds a variable, which makes copying unnecessary.

With quantification, the Focus phrase appears in the embedded clause as in the adult grammar. Focus phrases are linked to specific verbs and therefore entail subcategorization. When verb subcategorization is acquired (Weissenborn, Roeper & de Villiers, 1991) movement (both copy and delete) then the WH word can appear in the Focus phrase under subcategorization. Subcategorization allows Prope Government by the higher verb, which now makes the ECP (Proper Government) active. The child deletes the WH copy when verb-subcategorization is acquired. Predictably, then, children show a decrease in partial movement for verbs like wonder [+WH] (Weissenborn, Roeper & de Villiers, 1991).
Under Minimalism, where government is no longer a fundamental principle, the relation can be restated configurationally as a Sister relation with. possibly, a Feature on the verb that selects the Focus Phrase.

3.3 **The parallel between partial movement and copying**

A further claim is natural and leads to work currently underway. We need to test the interaction between negation and the presence of a different medial WH word. This will establish whether children carry out invisible LF-movement with any wh-word. Negation should block extraction of medial *how* and *why*. For example, in sentence (11), to answer *how*

(11)   a. <u>When</u> did the girl <u>not</u> tell her Mom <u>how</u> she broke her bike?

        b. <u>When</u> did the girl tell her Mom <u>how</u> she broke her bike?

(i.e. PM--> how broke? By smashing into a big rock, in contrast to SD--> when she didn't tell? In the evening, and LD--> when broke? In the afternoon.), one needs to move over negation. In other words, is copying just one instance of LF-movement for wh-. If so, then any wh-word will show the same property (Horvath, 1996; Muller and Sternefeld, 1996). That is, the medial WH phrase moves covertly to the position of the matrix scope marker at Logical Form (LF) where every syntactic element receives interpretation.[1]

If children, however, do partial movement over negation in (11a), then there is co-indexation and no movement constraints apply. For example, co-indexation in binding is not blocked by negation as is shown in (12).

(12) Every boy¡ did not think he¡ had a hat.

This remains to be seen.

3. Conclusion

Selective islands have been the core of research on the acquisition of the CP system for the last decade. WH islands have already been demonstrated in child grammar. Is negation the same? Rizzi (1990) utilizing subtle and controversial data argued that adjuncts block in princple in the same manner as arguments. We have used acquistion data (1) to support his account, and (2) to demonstrate that copying, and by extension partial movement , involve invisible movement and Relativized Minimality at the level of Logical Form.   The fact that Logical Form effects are present among young children is itself a demonstration of the idea that   children's grammars possess the full abstract character of adult grammars.

References

Chomsky, N. (1993). A minimalist program for linguistic theory. In the view from building 20:   essay in linguistics in Honor of Sylvain Bromberger, K. Hale and S.J. Keyser (Eds), MIT Press,   Cambridge, MA

---

[1]See R. Frank (1997) for an extension of the Partial Movement concept to include other kinds of apparently Long-distant movement. In general, he argues that there is no Lond-Distance movement at early stages. Instead an invisible Operator functions in the same manner as a medial wh-phrase. His account makes all early wh-movement consistent, but leaves open the question of why and how the child moves to an adult grammar.

Chomsky, N. (1986). *Barriers*. MIT Press, Cambridge, MA.
de Villiers,J., Roeper,T., and Vainikka,A. (1990). The acquisition of long-distance rules. In L.   Frazier and J. de Villiers   (Eds.). *Language Processing and Language Acquisition*. Dordrecht: Kluwer Academic Publishers.
Horvath,J. (1996). Wh-expletive and partial Wh-movement. *NLLT*.
McDaniel, D. (1989). Partial and multiple wh-movement. *NLLT*, 7, 565-604.
Muller, G., and Sternefeld, W. (1996). A-bar chain formation and economy of derivation. *LI*, Vol.   27, No.3, 480-511.
Penner,z. (1996). Continuity contraints on the acquisition of the complementizer system. A case   study in Bernese Swiss German. Ms.
Rizzi, L. (1990). *Reletivized minimality*. MIT Press, Cambridge, MA.
Rizzi, L. (1992). Argument/adjunct (a)symmetries. *NELS*, 22, 365-381.
Thornton,R.(1990). Adventures in long-distance moving: the acquisition of complex Wh-questions,
        unpublished Ph.D. dissertation, university of Connecticut.