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# The Emergence of Barriers to Wh-movement, Negative Concord, and Quantification

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## 1. Barrier Theory and Acquisition

The existing theory of barriers has been pivotal in the modern history of generative grammar. The theory simply stated says:

1. Barriers are categorical
2. DP and CP block extraction out of them

This theory, which we call the Nice Old Theory (NOT), captures both *wh*-questions and invisible quantifier-movement. We argue that Negative Concord, found in African-American English (AAE) and many languages in the world, respects barriers as well. Relative clauses, for instance, block both extraction and Negative Concord, as we show below.

However modern minimalist theories dissolve the nodes into features, which eliminates a categorical statement of barriers and makes a unified theory of barriers more difficult to formulate. Syntactic categories are broken down into feature-bundles. Movement is motivated by allowing a feature in a higher position to attract a lower one (Chomsky, 2003).

Quantification barriers we argue, following Fox (2000) obey a constraint on interpretation which partly mimics the syntactic constraint. Negation falls in between: it shows properties of movement and quantification. This state of affairs raises the question: Should we expect a unified theory of barriers? We claim that an important diagnostic for unity emerges from examining the acquisition path for these structures. Two simple hypotheses emerge:

1. If barrier theory is not unified, then we predict that the acquisition pattern will not be unified.
2. If it is unified, then we expect simultaneous appearance of barriers in different domains.

Neither unity nor disunity is proven by simultaneity, but simultaneity follows naturally if a single principle applies at once across a range of structures. Therefore, if negative concord shares properties with interrogatives, the same barrier effects assimilated for *wh*-movement and quantification may be apparent for negative concord.

## 2. Common Barriers

The three kinds of syntactic phenomena at first seem to suggest the same barrier effects in adult language as illustrated in the following examples, each case with a relative clause.

The sequence [DP [CP ... ]] blocks extraction for *wh*- in (1):

- (1) a. you saw a horse that every child was riding  
b. \*who did you see a horse that    was riding => every child?

We cannot extract the subject by *wh*-movement out of a relative clause. Predictably we also cannot extract an adjunct from a relative clause:

- (2) Why did he help <sub>DP</sub>[the boy that sneezed?]

It is not possible to get the reading why-sneezed which would involve extraction from a relative. Only the short-distance why-helped occurs.

In (3) likewise the quantifier would have to move outside the relative to receive wide scope so that the quantifier (*every child*) is higher and c-commands the indefinite (a horse) in the traditional representation of Logical Form (LF):

- (3) there is a horse that every child is on  
[DP a horse [ CP that every child is on]  
    < =====//=====  
a) LF: [every child, a horse]  
       =every child on a different horse  
b) [a horse, every child]  
      = one horse that carries every child.

However we find that reading (3a) is blocked, allowing only wide-scope for the indefinite at LF which delivers the one horse meaning.

In (4) likewise the Negative Concord in AAE works inside a single clause:

- (4) a. He don't want no hotdog =  
b. He don't want a hotdog

However, with a relative clause the second negation is real and does not invoke Concord, since the barrier blocks the formation of a Concord chain. We get the reading:

- (5) He don't want a hotdog that has no mustard  
      n't + no = positive



hidden wh-expression in the Spec of CP blocking any other occupant:

- (13) The thing [which] that I bought

If we assume all operators move through Spec CP, then this blocks Neg-movement and could block QR, *in addition* to the scope-shifting principle.

#### 4. Acquisition Evidence for Complex NP Barriers

DeVilliers, Roeper & Vainikka (1991) showed that children *obey* barriers for *wh-movement* at an early age: 3-4 year old children do not license wh-traces inside relative clauses (de Villiers & Roeper, 1995). However, young children do *not obey* barriers for *quantifiers* (Roeper and de Villiers, 1994). They readily allow *every* to move at LF from inside a relative clause even at age 6, perhaps later. In sum, previous evidence indicated that children show barriers to overt syntactic movement (wh) before barriers to invisible movement at the level of LF (quantifiers). This invites a general view that constraints on Logical Form—interpretive constraints—appear at a later point in the acquisition sequence (see Roeper and deVilliers, 1991). This claim can in turn be considered a general case of ordered parameters, which figures prominently in learnability theory.

Now we can ask from an acquisition perspective: Is negative concord like wh-extraction or is it like quantifier-extraction? Coles (1998) studied 4-6 year old children's responses to one barrier to negative concord interpretation in NP and VP prepositional phrases. PP inside NP is also traditionally seen as DP barriers [DP [NP [PP]]], while VP-PP's have no barrier and therefore should be open to NegCon.

- (14) a. He caught a dog, but he didn't catch a dog with no tail.  
       = he caught a dog with a tail  
       b. He caught a dog, but he didn't catch a dog with no net.  
       i.e. he caught a dog, but not with a net (perhaps with a cage).

Six-year-old AAE speakers were sensitive to the complex NP barrier, giving different responses to the two types of prepositional phrase. This correlates with Otsu's (1981) demonstration that children were sensitive to wh-extraction in the same construction.

However, the children still permitted 30% of answers that allowed negative concord across the complex NP, e.g. they said the man caught a dog with a tail. Although it is possible that picture-choice confused them, we decided to contrast all three structures with a clearer barrier, relative clauses.

#### 4.1 Subjects and methods:

Twenty-one AAE speaking children ages 62-99 months, were read short stories or story-like items featuring target sentences with different types of

operators (e.g., negative, wh-word, quantifier) and different relative clause types, e.g., "weak" (subject relative) the hotdog that has mustard, and "strong" (object relative, the present that the baby opened).

Pretests guaranteed that children understood each construction in a simple clause:

- A) Universal *every* distributed over existential  
*Every boy has a hat*  
 B) Negative concord  
*Which dog don't have no collar?*  
 C) Why questions that involve inference from story/picture.  
*Why ain't he eatin' corn?*

We also used special procedures to avoid interference in picture choice, direct manipulation of toys to conform to the reading of quantifier sentences, and asking "why" as a way to show comprehension of NegCon. We provide one picture to give the flavor of the task.

#### 4.2 Quantifier barrier example

- (15) a. There is a basket that got every egg. Show me.  
 Barrier violation= every basket gets an egg

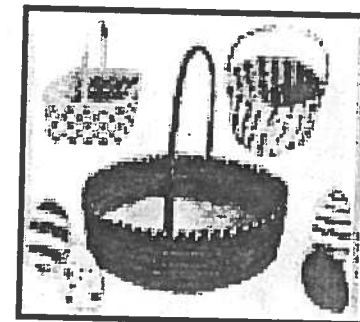


Figure 1.

#### 4.3 Negative Concord barrier example

- (16) This boy don't want the ice cream that got no nuts. Why?  
 Correct reading: "because he loves nuts"  
 Barrier violation "because he hates nuts"= NegCon reading  
 (cf: he don't want no nuts)

#### 4.4 Why-question barrier example

- (17) The two brothers went swimming. This boy caught a cold from swimming in the cold water. He went to buy some juice because

his throat was sore.

a. Why did the boy that had a cold buy the juice?

Correct answer: "because his throat was sore"

Barrier violation: "because he went swimming in cold water"  
= answer to "why did he have a cold?"

#### 4.5 Results

Do children treat the different types of Operator (negation, wh-question and quantifier) differently with the barrier?

- a. A 3 x 2 ANOVA was performed with operator type (quantifier, negative, and wh question) as one factor and relative clause type (weak versus strong) as the second. Both operator type and relative clause type were highly significant.

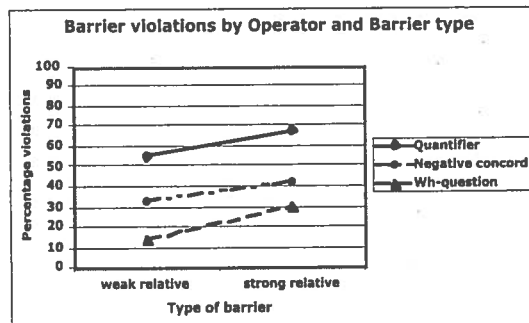


Figure 1.

- b. Kendall's coefficient  $\Rightarrow$  highly significant ranking, with most barrier violations for quantifiers. (See Figure 1.)

questions < negative concord < quantifiers

- c. Age was only weakly significant overall.

Is there any relation between a given child's propensity to violate the barriers with one operator compared to another?

- d. No correlation was found: each Operator behaved differently.

#### 5. Discussion

Our results strongly support a broad claim:

- (18) Overt movement is recognized before covert movement.

That is, barriers block visible overt movement in wh-questions by many children who do not block invisible overt movement for quantifiers. This result patterns naturally with extensive arguments to the effect that quantifiers are not initially analyzed as a part of DP's and therefore function as adverbial modifiers that range over a full sentence.

Now a more difficult question arises: Why is NegCon between visible Wh and invisible QR? We have argued that NegCon should be assimilated to wh-movement, which then predicts that it should pattern with wh-movement.

We propose that the delay is due to the fact that movement is incomplete, producing partial visibility with NegCon. If leftward movement is involved, utilizing Copy and Delete, then the presence of two negation markers indicates that no deletion of the original negative (no) has occurred.

Why, exactly, should double marking be problematic for the child? Note that, without deletion, the sentences remain ambiguous between NegCon and a true Negative reading. The child must consult context before the sentence can be disambiguated and a choice between NegCon and True Negatives can be made. Only when stimulated by seeing how meaning matches context is a movement analysis forced and the Negative chain path becomes explicit. Confirmation from context is not required for wh-movement. In contrast, invisible QR never has an explicit landing site.

Other language particular analyses are prerequisite and may therefore intervene preventing an instant recognition of the barrier effect. Suppose the child does not know that "n't" is a clitic contraction from a NegP functional head which causes Feature-checking to occur. It is arguable that not all languages have Neg as a functional category. Until the child receives evidence that there is a NegP functional category, the Negative operates as an adverb which does not engage in Feature-checking. This is precisely the conclusion that Abdul-karim (2001) arrived at to explain why in her examination of relativized minimality and barriers, the clitic n't proved a stronger barrier than not. She argued that the child assimilated not to the class of negative adverbials which did not have the power to invoke a Negation chain. Until that time they could treat negation as a global adverbial operator much like the spreading effects with every, therefore not subject to barriers (Roeper and deVilliers, 1991; Philip, 1995). This would produce an interesting extension of evidence about quantifier errors, but a full treatment of the issue is beyond the scope of this paper. (See Crain and Thornton (1999), Drozd (in press) and references therein).

## 6. Conclusions

- 1) The acquisition data provides striking arguments against the NOT: there is no unity of barrier effects. That QR meets different constraints than feature-checking is shown by its late obedience to barriers.
- 2) It also supports the general claim that LF phenomena which involve interpretive principles are delayed.
- 3) It provides novel support for an analysis of Negative Concord as a movement motivated by Feature\*Attraction.

This in turn reveals how dialects may obey fundamental principles of grammar in a unique fashion, showing that Copy without Delete is also subject to barriers.

New fundamental questions about acquisition also arise in this context. What causes LF phenomena to be late? A number of intriguing hypotheses are possible. First one might argue that these principles involve an interaction with the cognitive interface. Second, LF and its interface connections might be subject to maturation. Beyond such a claim lies a potential learnability claim: the ordering of LF parameters after prior syntactic decisions may facilitate acquisition. These questions require a much more extensive articulation of acquisition evidence—which should form a significant part of the acquisition research agenda.

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## References

- Abdul-karim, L. (2001). *Complex Questions and Universal Grammar: New Evidence from the Acquisition of Barriers* Unpublished doctoral dissertation, University of Massachusetts, Amherst.
- Chomsky, N. (2003). *Beyond Explanatory Adequacy*. Unpublished manuscript, Department of Linguistics, MIT, Cambridge, MA.
- Coles, D. (1998) *Barriers and Negative Concord*. Unpublished doctoral dissertation, University of Massachusetts, Amherst.
- Crain, S. and R. Thornton (1998) *Investigations in Universal Grammar*. Cambridge MA: MIT Press.
- de Villiers & Roeper, T. (1995). Barriers, binding, and acquisition of the DP-NP

- distinction. *Language Acquisition*, 4(1&2), 73-105.
- deVilliers, J. and T. Roeper & A. Vainikka (1990). The acquisition of long distance rules. In L. Frazier & J. de Villiers (Eds.) *Language processing and language acquisition* (pp. 257-299). Boston: Kluwer.
- Droz, K. (in press) Review of Crain, S. & Thornton, R. (1998) *Investigations in Universal Grammar*. *Journal of Child Language*.
- Fox, D. (2000). *Economy and semantic interpretation*. Cambridge MA: MIT Press.
- Otsu, Y. (1981) *Universal Grammar and syntactic development in children*. Unpublished doctoral dissertation. MIT, Cambridge, MA.
- Philip, W. (1995) *Event quantification in the acquisition of universal quantification*. Unpublished doctoral dissertation, University of Massachusetts, Amherst.
- Roeper, T and J. deVilliers (1993). The emergence of bound variables. In E. Reuland & W. Abraham (Eds.) *Knowledge and language* (pp. 105-139). Boston: Kluwer.
- Roeper, T., & de Villiers, J. G. (1994). Lexical links in the wh-chain. In B. Lust, G. Hermon, & J. Kornfilt (Eds.) *Syntactic theory and first language acquisition: Crosslinguistic perspectives. Vol. II: Binding, dependencies, and learnability* (pp. 357-390). Hillsdale, NJ: L. Erlbaum.