IS OBJECT EXTRACTION SUBJECT TO CHILD RELATIVIZED MINIMALITY?*

Helen Goodluck
University of York, U.K.

This paper is a response to a recent paper by Friedmann, Belletti and Rizzi (2009) on the first language acquisition of relative clauses and questions. I argue that their analysis violates the continuity assumption for child grammars and propose an alternative account of the data in terms of an immature processing system.

1. Friedmann, Belletti and Rizzi 2009

1.1 Data

Friedmann et al. report a series of five comprehension experiments with Hebrew speaking children. They find that object relatives are more difficult than subject relatives when the subject of the object relative is a lexically specified NP (1b is harder than 1a),

(1) a. Tare li et ha-para she-menasheket et ha-tarnegolet.
show to-me ACC the-cow that-kisses ACC the-chicken
'Show me the cow that is kissing the chicken.'

b. Tare li et ha-pil she-ha-arie martiv.
show to-me ACC the-cow that-the-lion wets
'Show me the elephant that the lion is wetting.'

This was true both when the relative contained a gap and when it contained a resumptive pronoun.

A similar asymmetry between subject and object relatives was not observed in the case of free relatives such as (2a,b),

(2) a. Tare li et mi she-martiv et ha-yeled.
show to-me ACC who that-wets ACC the-boy
'Show me the one that is wetting the boy.'

b. Tare li et mi she-ha-yeled menadned.
show to-me ACC who that-the-boy swings
'Show me the one that the boy is swinging.'

or in the case of object relatives with an arbitrary *pro* subject in the relative clause,

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(3) Tare li et ha-sus she-mesarkim oto.
show to-me ACC the-horse that-brush-pl him
'Show me the horse that someone is brushing.'

Object questions (4c,d) were more difficult than subject questions (4a,b), but only when the question phrase contained a referential phrase (was D(iscourse)-linked, 4d),

(4) a. Mi noshex et ha-xatul?
who bites ACC the-cat
'Who bites the cat?'

b. Eize kelev noshex et ha-xatul?
which dog bites ACC the-cat
'Which dog bites the cat?'

c. Et mi ha-xatul noshex?
ACC who the-cat bites
'Whom does the cat bite?'

d. Et eize kelev ha-xatul noshex?
ACC which dog the-cat bites
'Which dog does the cat bite?'

Friedmann et al.'s results replicate previous studies of children's comprehension of relatives and questions in English and other languages (for example, Sheldon 1974, Avrutin 2000 among many others).

1.2 Analysis

Friedmann et al. propose that the data can be accounted for if children operate with a non-adult version of Relativized Minimality (Rizzi 1990 and subsequent work). The adult grammar permits extraction of an object over an intervening NP provided that the intervenor has a distinct feature specification. By contrast, on Friedmann et al.'s analysis, in the child grammar extraction is only possible when the specification of an intervenor is disjoint from that of the element that moves: Child Relativized Minimality (CRM). Thus, the adult grammar permits extraction of the angle bracketed element in (5a,b), but the child grammar does not, because the intervening element (the subject) shares part of the specification of the element to be moved,

(5) a. [+R, +NP] …….[+NP] …….<+R, +NP>
(specification for relative clauses)
b [+Q, +NP] …….[+NP] ……< +Q, +NP>
(specification for D-linked questions).

[+R] and [+Q] are relative and interrogative features; and [+NP] designates an element with a lexical restriction.

The child grammar deals well with subject relatives because there is no intervening element, and with non-D-linked object questions (3c) because the wh-phrase to be moved does not bear the feature [+NP]. Similarly, free relatives and relatives with an arbitrary *pro* subject also do not exhibit a subject-object asymmetry because there is no intervening [+NP] element. Friedmann et al. suggest that the child's more restrictive version of Relativized Minimality may be motivated by a difficulty in computing subset/superset relations.

2. Data that is problematic for the Friedmann et al. analysis

In this section I present some findings that are not accounted for under the CRM hypothesis.

2.1 D-linked object questions are not always difficult.

In Goodluck (2005) I report the results of two experiments on four to six-year old English-speaking children's comprehension of D-linked questions. The technique used was the same as that used by Avrutin and similar to that used by Friedmann et al. The experimenter acted out scenarios with animal models and then posed a question to the child. The question types tested as given in (6). The scenario for the examples in (6) was for a lion to first kiss a zebra, which then kicked a second lion.

(6) a. Who kissed the lion?
b. Which lion did the zebra kiss?
c. Who did the lion kiss?
d. Which lion did the zebra kiss?

Experiment 1 replicated the finding of Avrutin (2000). Performance of question types (6a-c) was well above chance but fell to chance on type (5d).

The problem for Friedmann et al's analysis comes from Experiment 2. In Experiment 2 the D-linked phrases were replaced by the less specific 'which animal'. Performance on D-linked object questions rose to the same level as for the other question types tested. This is problematic for Friedmann et al.'s analysis because the grammatical feature specification for the D-linked object question will not change with the switch to 'which animal'. In addition, in a question such as 'Which lion did the zebra kiss?' the set of entities corresponding to lions does not include zebras, but in a question such as 'Which animal did the zebra kiss?', the total set of animals does include the zebra. Thus if children have trouble with subset/superset relations they should do worse on the 'which animal' version of the question.

2.2 D-linked subject questions are not challenge free.

In a new experiment, forty seven English speaking children aged 4-5 were tested on the sentence types in (6), using the same procedure as Avrutin (2000) and Goodluck (2005). Each child responded to four tokens of each sentence type.[1]

The results are given in Table 1. As we would expect from previous results, D-linked object questions are considerably more difficult than non-D-linked object questions. However, there is also a (smaller) deficit for D-linked subject questions. The effect of D-linking on subject extraction is not accounted for by CRM as formulated by Friedmann et al.

Table 1
Comprehension of question types (6a-d)
Mean Percentage Correct Responses

Subject Questions		Object questions	
-DL	+DL	-DL	+DL
82	72	83	58

An anova revealed no main effect of place of extraction (subject/object) ($F(1,46) = 1.898$, $p = .175$), a main effect of +/- D-linking, ($F(1,46) = 35.437$, $p < .001$) and a significant interaction of place of extraction and D-linking ($F(1,46) = 5.914$, $p = .019$). This interaction was not due solely to object questions. There was a significant difference between the two question types for both subject and object questions.

2.1 Other observations

Friedmann et al. also report an elicited production task, in which children performed worse on producing object relatives than subject relatives. This would follow from CRM as a grammatical constraint. But other factors may be at work to produce this result. Kidd, Brandt, Lieven and Tomasello (2007) show in a repetition task with German speaking three and four year olds that performance was significantly improved both when the head of the relative was animate and when the subject of the relative clause was pronominal. While CRM predicts the latter result, it has nothing to say about the former. (See also Corrêa 1995).

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1. The design of the experiment was more complex than reported here. Subjects were divided into three groups and saw the scenarios acted out either from left to right from the subject viewpoint, right to left, or in both directions. The purpose was to test for a bias to point to the left based on the human left visual preference (see Orr and Nicolls 2005). There were non-significant trends in the predicted direction.

3. Theoretical implications of CRM

A commonly assumed constraint on non-adult grammars is *continuity*: every child grammar is a possible human grammar, although not necessarily the grammar of the ambient language. CRM links children's grammar to adult representations/constraints, but it does so in a way that appears to violate continuity. The essence of Relativized Minimality is that an intervenor may not be in a position that could be targeted by the movement – thus in the adult grammar, the subject of an object relative clause does not block movement because it is not in an A-bar position (in more recent formulations, does not have a +R feature which is on the landing site and the element to be moved). If children require disjointness of features of the moved element and the intervenor this implies that they are entertaining a grammar in which the distinction between A and A-bar positions is lost.

4. An alternative to CRM

In this section, I propose that the construct of CRM can be replaced by an account of the findings that it deals with in terms of processing pressure. On this view the child operates with an adult-like version of Relativized Minimality, and hence with a grammar with conforms with the continuity hypothesis.

In sentence processing and production, we will assume that both the length of an extraction and the extraction of a (specific) D-linked element have a cost. The combination of D-linking and object extraction will be harder than the combination of D-linking and subject movement, although movement of a D-linked subject is not completely cost free, as we saw in the experiment reported above. An effect of specificity of the D-linked phrase ('which lion' vs. 'which animal') has been independently observed in adult sentence processing by Donkers et al.(n.d.). Donkers et al. propose that an operation of set restriction is necessary in the case of specific D-linked phrases, slowing comprehension times for adults. The effect of animacy of the head (Kidd et al.) not surprising, given that objects are more frequently inanimate than subjects.

Overall, we can maintain that the child operates with an adult-like version of Relativized Minimality, and that the difficulty children experience with certain sentence types reflects performance.

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