Learning Scope Economy:
Why Children Will QR out of a Tensed Embedded Clause, but Adults Won't

Wh-movement and Quantifier Raising (QR) have been observed to differ with respect to movement out of a tensed clause: while *wh*-movement is permissible (1a), Quantifier Raising (QR) seems not to be (1b). Given that A-bar movement is normally unbounded, the clause-boundedness of QR has provided the major empirical stumbling block to a theory of QR as A-bar movement. Fox (1999) proposes that the difference between QR and *wh*-movement lies in the motivation for movement. *Wh*-movement is motivated by syntactic features, whereas QR is motivated by interpretation. In particular, QR is possible only when movement leads to a distinct interpretation; movement into the CP-domain is semantically unmotivated, and therefore illicit, trapping the QP inside the embedded clause. Thus, the difference in locality derives not from the nature of movement (as both are A-bar movement), but from the trigger for movement. A crucial piece of this theory is that determining whether QR can apply involves comparing a derivation in which movement has not taken place with one in which it has. Grodzinsky and Reinhart (1993) and Reinhart (to appear) argue that such trans-derivational comparisons are difficult for children to compute, giving the appearance that they lack these computations altogether. If this account is correct, then we expect children to allow QR out of tensed clauses, even though this movement is blocked for adults. In this paper, we show that this prediction is borne out. 4-year-old children allow QR out of a tensed clause but adults do not. These results support the hypothesis that QR is A-bar movement constrained by scope economy.

QR is generally held to be responsible for the grammaticality of sentences containing Antecedent Contained Deletion (ACD), as in (2) (Sag 1976, May 1985, Kennedy 1997). 4-year-olds have been shown to be able to interpret sentences containing ACD at adult-like levels (Lidz et al 2004; Kiguchi and Thornton 2004). Moreover, Syrett and Lidz (2005) showed that when presented with ambiguous ACD contained in embedded non-finite clauses, such as (3), children and adults are able to access both the embedded and matrix interpretations. Given (a) the requirement of QR for ACD (b) the economy-based explanation for the impossibility of QR out of a tensed clause, and (c) the hypothesis that children are insensitive to economy, we reasoned that children, but not adults, would allow the elided VP in sentences like (3) to take the matrix VP as its antecedent.

We tested 4-year-olds (N=18) and adults (N=8) on sentences containing ACD inside a tensed clause (4) in a Truth-Value Judgment Task. Participants were assigned to one of two conditions. In the matrix condition, participants saw a story in which the matrix reading (requiring successive-cyclic QR out of the finite embedded clause) was true, while the embedded reading (requiring clause-local QR) was false. In the embedded condition, the embedded reading was true, while the matrix reading was false. Adults categorically rejected the matrix reading, accepting it only 12.5% of the time (only 1 of 8 adults). Children, however, accessed the matrix reading significantly more often ($F(1,25) = 3.706$, $p<0.06$), giving matrix responses 40.3% of the time (along with justifications), independent of the condition.

These results confirm the prediction that children allow QR out of a tensed embedded clause, but adults do not. In concert with the results from Syrett and Lidz (2005), we can conclude that adults' ability to access the matrix reading is determined by the finiteness of the embedded clause and that children are insensitive to finiteness as a constraint on ACD/QR. A control study demonstrates that these age-group differences lie in QR and not in the interpretation of the elided VP. In sentences like (5), children (N=24) and adults (N=21) were alike in allowing the matrix VP to serve as the antecedent of the elided VP. They accessed a matrix reading significantly more often in the matrix condition (adults 94%, children 71%) than in the embedded condition (adults 19%, children 31%) ($F(1,44) = 57.67$, $p<0.0001$).

If QR in ACD is successive-cyclic A-bar movement (Kennedy 1997, contra Hornstein 1994), then movement should not be clause-bounded *a priori*, and a matrix reading should, in principle, be available. However, the movement that derives the matrix reading is constrained by economy as well. As Wilder (1997), Cechetto (2004) and Fox (1995b) have shown, when economy can be satisfied, the matrix reading becomes available (6). Children, however, appear to be free from the constraints of scope economy and therefore access matrix readings more readily.

Examples

(1) a. What did a technician say that John inspected? (Cecchetto 2004)
b. A technician said that John inspected every plane. (*every > a)

(2) John read every book that Bill did ~~read~~.

(3) Clifford asked Goofy to read every book that Scooby did.
read (embedded)
asked Goofy to read (matrix)

(4) Clifford said that Goofy read every book that Scooby did.
read (embedded)
said that Goofy read (matrix)

(5) Clifford asked Goofy to read the [big/small] books because Scooby did.
read the [big/small] books (embedded)
asked Goofy to read the [big/small] books (matrix)

(6) a. I said that he_i bought everything $Bill_i$ thought I did. (Fox 1995b)
said that he_i bought
b. John said that you were on every committee that Bill did. (Wilder 1997)
said that you were on
c. Un sindacalista della CGIL garantirà di assistere ogni operaio che non vuole che sia la CISL a farlo. (Cecchetto 2004)
'A CGIL trade unionist will guarantee to help each worker who does not want that (it) be CISL to do that.'
guarantee to help him

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