A rating study of frozen scope in the English VP-internal locative alternation

Sarah Kresh
The Graduate Center, CUNY
skresh@gradcenter.cuny.edu

In most English sentences with two quantified NP's, quantifier scope is ambiguous (1), but for variants of the VP-internal locative alternation in which the Locatum surfaces in indirect object position, it has been claimed that a universally quantified Locatum cannot out-scope an existentially quantified **Location**[1]; see (2) and (3).

(1) **A child** climbed every tree. *a>every, every>a*
(2) The workers loaded **a truck** with every box. *a>every, *every>a*
(3) The waiter cleared **a table** of every dish. *a>every, *every>a*
(4) The workers loaded every box on **a truck**. *a>every, every>a*
(5) The workers loaded **the truck** with every box. control condition

To test this claim, participants were asked to judge the acceptability of a plural interpretation of the **Location**, on a 7-point scale from *-3: must be singular*, to *0: both interpretations are equally good*, to *3: must be plural*. Experimental items were sentences like (2) and (3), taken from four verb classes, crossing preposition (*with/of*) and the availability of a DO-Locatum PP-variant (4)[2]. Items were normed and counterbalanced for the plausibility of a collective *vs.* distributed spatial relation between the **Location** and Locatum and rated for ambiguity of PP-attachment (to verb or noun). Experimental items were compared to unambiguous matched control sentences with only one quantifier (ex., (5) is the control for (2)). Presentation was in IBEX, online at IBEX Farm.[3] Each list included 18 experimental items, 18 control items, and 108 assorted fillers.

Data from 50 adult native speakers of English (mean age 43.3) were modeled using cumulative link logistic regression [4]. The analysis picked out condition, plausibility, age, and preposition as contributing to the distribution of ratings. Experimental items were rated higher than control items ($p<.001$, fig. 1). Distributive-bias items were rated higher than neutral items ($p<.001$), which were rated higher than collective-bias items ($p=.005$). Older participants rated items more toward the "frozen" end of the scale ($p=.007$). Experimental *with*-variants (2) were rated higher than *of*-variants (3), relative to controls (5), and they were more likely to be rated "equally good" ($p<.001$, fig. 2).

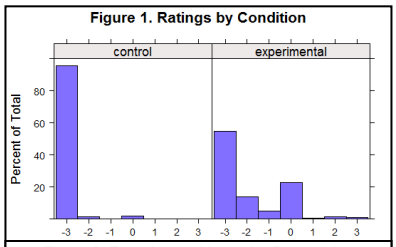

Figure 1. Ratings by Condition

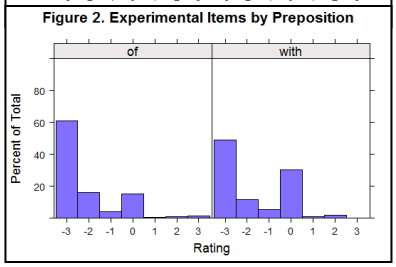

Figure 2. Experimental Items by Preposition

The preposition effect is not predicted by the theory of frozen scope[1], nor is it likely to arise from task-related variability. Rather, it indicates that quantifier scope is not frozen across-the-board for oblique-Locatum variants of the English VP-internal locative alternation. I propose that the syntactic structure of *with*- and *of*-variants differs in a way that predicts this effect and that the possible scope readings for these sentences are analogous to those available for French *avec*-variants (free) and *de*-variants (frozen), respectively. The semblance of frozen scope in *with*-variants is argued to be due to a combination of processing factors (ex., a preference for surface readings of *a…every* quantifier order[5], also seen in participants' ratings of ambiguous filler items) and semantic factors (ex., the holistic affectedness of the Location implied by its promotion[6]).

References: **[1]** Bruening, B. (2001). QR obeys Superiority: Frozen scope and ACD. *Linguistic Inquiry*, *32*(2), 233–273. **[2]** Levin, B. (1993). *English verb classes and alternations: A preliminary investigation*. University of Chicago Press. **[3]** Drummond, A. (n.d.). Ibex 0.3.6 Manual. http://spellout.net/. **[4]** Christensen, R. H. B. (2012). Ordinal—regression models for ordinal data R package version 2012.01-19. Vienna: R Foundation for Statistical Computing. https://cran.r-project.org/. **[5]** Fodor, J. D. (1982). The mental representation of quantifiers. In *Processes, beliefs, and questions* (pp. 129-164). Springer Netherlands. **[6]** Anderson, S. R. (1971). On the role of deep structure in semantic interpretation. *Foundations of Language*, 387-396.