An experimental study on the scope of (un)modified indefinites

Tania Ionin, University of Illinois at Urbana-Champaign

There has been much theoretical literature on the ability of English indefinites to have *long-distance* (LD) scope readings. Unlike other quantifier phrases, indefinites can scope out of an island such as a relative clause in (1a) and take either *widest scope* (context (2a)), or *intermediate scope* beneath a higher quantifier (context (2b)) (Farkas 1981 and much subsequent literature); indefinites can also have local, narrow-scope readings (2c). An influential approach to LD readings derives them through the non-quantificational mechanism of Choice Functions (CFs), which map any non-empty set in their domain to a member of this set, as in (3) (Reinhart 1997, Winter 1997, Kratzer 1998, i.a.).

While CF theories assume LD scope to be freely available to English *a* indefinites, prior experimental work (Ionin 2008, under review) has shown that linguistically naïve native English speakers in fact strongly disprefer both widest-scope and intermediate-scope readings of *a* indefinites, in comparison to their narrow-scope readings. In contrast, *a certain* indefinites (which are usually analyzed as obligatorily non-quantificational – Kratzer 1998, Schwarz 2001, i.a.) have been found to freely allow LD scope. These results support the proposal of Schwarz (2001) that *a* indefinites and *a certain* indefinites are derived through different mechanisms.

The present study seeks to expand on these findings, by comparing the four different kinds of indefinites in (1a-d). It has often been claimed (Beghelli 1995, Winter 2001, i.a.) that modified numeral indefinites such as *exactly/at least one* (1c-d) are obligatorily quantificational, unlike *a/one*-indefinites (1a-b). If LD readings are derived by a non-quantificational mechanism, they should be available to *a/one* but not to *exactly/at least one* indefinites.

This prediction was tested using a written Truth-Value Judgment Task (TVJT), in which participants (adult native English speakers) evaluated the truth of sentences such as those in (1a-d) in the context of stories such as (2a-c) (each item consisted of a single story-sentence pair). The contexts in (2a-b) always make the target sentence false on the narrow-scope reading of the indefinite, so the response of TRUE indicates the availability of the widest-scope (2a) or intermediate-scope (2b) reading. The results indicate that LD readings are equally available to *one* and *exactly one* indefinites, and less available to *a* and *at least one* indefinites.

These results cannot be accounted for on CF theories, which predict LD readings to be unavailable to *exactly one* indefinites as much as to *at least one* indefinites. Two alternative explanations of the findings are discussed. The first is the 'singleton indefinite' approach of Schwarzschild (2002), on which indefinites are obligatorily quantificational and subject to island constraints, and LD scope is an illusion created by implicit domain restriction to a singleton set. The second is the view that indefinites are able to scope out of islands after all (cf. the 'scope-shifting' approach in Schwarz 2001), but that LD scope, like inverse local scope, is dispreferred for processing reasons (cf. Anderson 2004). It is shown that neither explanation can fully capture the experimental findings without additional modifications. The role of pragmatics is discussed, and it is suggested that LD scope is facilitated when the narrow-scope reading is pragmatically infelicitous in the context. Taken together, the findings highlight the value of experimentally testing the predictions of semantic theories. This paper will also pose questions for further research that arise in light of the findings.

(1)   a.   Every student read every book that a teacher had recommended.
        b.   Every student read every book that one teacher had recommended.
        c.   Every student read every book that exactly one teacher had recommended.
        d.   Every student read every book that at least one teacher had recommended.

(2)   a.   *context matches widest-scope reading of indefinite: a teacher>every student>every book*
The two English teachers – Ms. Baker and Mr. Smith – made summer reading lists for their students. Each teacher put six recommended books on his or her list, with no overlap between the lists. All of the students in the class really liked Ms. Baker's list, so they finished all the books on it. But they found Mr. Smith's list boring, and didn't read more than one or two books from it.

      b. *context matches intermediate-scope reading of indefinite: every student>a teacher>every book*
The two social studies teachers – Ms. Rosen and Mr. Gomez – made summer reading lists for their students. Each teacher put five books on his or her list, with no overlap between the lists. The students didn't read all of the recommended books, though. Half of the students read all the books from Ms. Rosen's list, but ignored Mr. Gomez's list entirely. Whereas the other half of the students read all the books from Mr. Gomez's list, but no more than one or two books from Ms. Rosen's list.

      c.   *context matches narrow-scope reading of indefinite: every student>every book>a teacher*
Ms. Willard and Mr. Thompson, the two foreign language teachers in the school, made summer reading lists for their students. Each teacher put four books on his or her list, with no overlap between the lists. The students were very well-behaved: all students finished all eight books. They wanted to please their teachers.

(3)   CF analysis, with Existential Closure of CF at different levels (Reinhart 1997, Winter 1997):
      a. widest scope: $\exists f$ [[every student] λ_1 [t_1 read every book that f(teacher) had recommended]]
      b. inter. scope: [[every student] λ_1 $\exists f$ [t_1 read every book that f(teacher) had recommended]]

References:

Anderson, C. 2004. The Structure and real-time comprehension of quantifier scope ambiguity. Ph.D. dissertation, Northwestern University.

Beghelli, F. 1995. The phrase structure of quantifier scope. Ph.D. dissertation, UCLA.

Farkas, D. 1981. Quantifier scope and syntactic islands. In *Proceedings of CLS 7*.

Ionin, T. 2008. An experimental investigation of the semantics and pragmatics of specificity. In N. Abner & J. Bishop (eds.), *Proceedings of the WCCFL 27* (pp. 229-237). Cascadilla Press.

Ionin, T. Under review. The scope of indefinites: an experimental investigation. Accepted with revisions by *Natural Language Semantics*.

Kratzer, A. 1998. Scope or pseudo-scope: Are there wide-scope indefinites? In S. Rothstein (ed.), *Events in Grammar*, 163-196.

Reinhart, T. 1997. Quantifier scope: How labor is divided between QR and choice functions. *Linguistics and Philosophy*, 20, 335-397.

Schwarz, B. 2001. Two kinds of long-distance indefinites. In *Proceedings of the Thirteenth Amsterdam Colloquium*.

Schwarzschild, R. 2002. Singleton indefinites. *Journal of Semantics,* 19, 289-314.

Winter, Y. 1997. Choice functions and the scopal semantics of indefinites. *Linguistics and Philosophy,* 20, 399-467.

Winter, Y. 2001. Flexibility principles in Boolean semantics: coordination, plurality and scope in natural language. MIT Press.