Stefan Keine, Jon Ander Mendia, & Ethan Poole (University of Massachusetts Amherst)
{keine, jmendiaaldam, ejpoole}@linguist.umass.edu

It's tough to reconstruct

Background: One of the most striking properties of *tough*-constructions (TCs) is that scope reconstruction of the matrix subject into the embedded gap position is impossible, unlike raising-to-subject constructions (Postal 1974, Epstein 1989, Hartman 2012, Fleisher 2013):

(1) a. **Few people** are easy to talk to ___. ≠ It is easy to talk to **few people**.
b. **Someone** is easy to talk to ___. ≠ It is easy to talk to **someone**.

However, Longenbaugh (2015) discovers instances of TCs with comparative quantifiers (e.g. *more than*, *less than*) that prima facie appear to require precisely this reconstruction and hence constitute potential counterexamples to the lack of reconstruction in TCs:

(2) a. It is easy to talk to **fewer than three professors** (at once).
b. **Fewer than three professors** are easy to talk to ___ (at once).

One interpretation of (2b) is that for any group of professors whose cardinality is less than three, it is easy to talk to that group; this nonspecific reading is superficially similar to the corresponding expletive construction in (2a). Thus, Longenbaugh (2015) argues that this reading is obtained by reconstructing *fewer than three professors* into the infinitival clause. If correct, (2b) would provide a powerful argument for a movement account of TCs.

Claim: We argue that despite initial appearances, comparative quantifiers do *not* and *cannot* reconstruct in TCs. In particular, we argue that specificity does not diagnose reconstruction of a comparative quantifier and that the true reconstructed reading is unavailable. We show that these facts follow straightforwardly from Hackl's (2001) analysis of comparative quantifiers and a base-generation analysis of TCs.

Specific vs. nonspecific: First, we observe that the specific–nonspecific contrast that examples such as (2) rely on is in fact a general property of comparative quantifiers:

(3) Last year, **fewer than five people** fit in my old car when we went on vacation.

(3) has both a specific and nonspecific interpretation with respect to individuals, despite having no modal operator that the comparative quantifier could scope below. Thus, the nonspecific interpretation of (2b) is not due to reconstruction, but a general property of comparative quantifiers.

Diagnosing reconstruction: The true reconstructed reading of sentences like (2b) would involve interpreting the modified numeral below the scope of the *tough*-predicate. To illustrate this type of scope ambiguity, consider the sentence in (4).

(4) John is required to read **fewer than six books**.
a. *Upper-bound:* John isn't allowed to read more than 5 books. (require ≫ <6)
b. *Minimality:* (<6 ≫ require)
The minimal number of books that John is required to read is less than 6.

(4) has two readings: The first states that there is an upper bound on the number of books that John can read (4a). The second states that there is some minimal number of books that John is required to read (4b). The upper-bound reading is obtained by *require* scoping above the comparative quantifier. The minimality reading is obtained by *require* scoping below the comparative quantifier. In a TC, true reconstruction would yield an interpretation equivalent to the upper-bound reading of (4). Against this backdrop, consider the scenario in (5), where the only felicitous interpretation in consoling Jane would be the upper-bound reading.

(5) *Context:* Jane is worried about a test that she has to take. If she makes fewer than 10 mistakes on the test, she will pass; otherwise she will fail. Mary wants to console Jane by saying that it is fairly easy to make fewer than 10 mistakes on this test.
a. It is easy to make **fewer than 10 mistakes** on this test.
b.#**Fewer than 10 mistakes** are easy to make ___ on this test.

The expletive construction in (5a) is a consoling response because it expresses an upper bound on the number of mistakes that are easy to make on the test. However, the TC in (5b) is infelicitous in the context because the only available interpretation is the surface-scope reading, which is the minimality reading, where there is some number of mistakes such that it is easy to make that number of mistakes on the test. If reconstruction were possible in a TC, an upper-bound interpretation would be available in (5b), contrary to fact. We therefore conclude that reconstruction of a comparative quantifier is impossible in a TC.

Proposal: We propose that the available interpretations of (5a) and (5b) result from the interplay of the semantics of TCs and comparative quantifiers. We adopt here the standard semantics for comparative quantifiers from Hackl (2001) and Nouwen (2010): (i) Comparative quantifiers are interpreted as degree constructions following Heim (2000) (6). (ii) Argument DPs containing a number always contain a silent counting quantifier *many* (7). (iii) Comparative quantifiers undergo QR, leaving behind a degree trace and forming a property of degrees (8).

(6) a. $[\![\text{more than 3}]\!] = \lambda M_{dt}.\max_n(M(n)) > 3$
b. $[\![\text{less than 3}]\!] = \lambda M_{dt}.\max_n(M(n)) < 3$

(7) $[\![\text{many}]\!] = \lambda n \lambda P_{\langle e,st\rangle} \lambda Q_{\langle e,st\rangle} \lambda w.\exists x[|x| = n \wedge P(x)(w) \wedge Q(x)(w)]$

(8) [fewer than N] λn [John read [n-many books]]

For TCs, we adopt the semantics of Keine & Poole (2015), who assume a base-generation account à la Chomsky (1973). In a TC, a null operator $\overline{\text{A}}$-moves from the gap position to the edge of the embedded clause, yielding a property of individuals. When the embedded clause composes with the *tough*-predicate, it likewise yields a property of individuals (9b). This constituent then composes with the base-generated matrix subject (9c). In an expletive construction, the *tough*-predicate composes directly with the embedded clause, which denotes a proposition. For readability, we omit the degree and judge semantics of Keine & Poole (2015).

(9) a. $[\![\text{easy}]\!] = \lambda Q_{\langle e,st\rangle} \lambda x \lambda w.\forall w' \in \text{ACC}_w\big[\text{EASY}_{w'}\big(Q(x)(w')\big)\big]$
b. $[\![\text{easy to talk to}]\!] = \lambda x \lambda w.\forall w' \in \text{ACC}_w.\big[\text{EASY}_{w'}\big(\text{TALK-TO}(x)(w')\big)\big]$
c. $[\![\text{John is easy to talk to}]\!] = \lambda w.\forall w' \in \text{ACC}_w.\big[\text{EASY}_{w'}\big(\text{TALK-TO}(\text{John})(w')\big)\big]$

With this semantics, (5a) and (5b) have the LFs and denotations in (10) and (11) respectively.

(10) a. *LF for (5a):* [It is easy [[fewer than 10] λn [to make [n-many mistakes]]]]
b. $\forall w' \in \text{ACC}_w\big[\text{EASY}_{w'}\big(\max_n(\exists x[|x| = n \wedge \text{MISTAKE}(x)(w') \wedge \text{MAKE}(x)(w')]) < 10\big)\big]$

(11) a. *LF for (5b):* [fewer than 10] λn [[n-many mistakes] are easy λx [to make x]]
b. $\max_n\big(\exists x[|x| = n \wedge \text{MISTAKE}(x)(w) \wedge \forall w' \in \text{ACC}_w[\text{EASY}_{w'}(\text{MAKE}(x)(w'))]]\big) < 10$

Consequently, in the expletive construction, the *tough*-predicate obligatorily scopes over the comparative quantifier, while in the TC, it obligatorily scopes below the comparative quantifier. This yields only an upper-bound reading in the expletive construction and a minimality reading in the TC. Thus, the only interpretation available to a TC is with the comparative quantifier outscoping the *tough*-predicate. This accounts for the infelicity of the sentence in (5b), and, moreover, it extends to the original example in (2b).

Conclusion: At first glance, (2) provides strong evidence for reconstruction in TCs. We have argued that this evidence is only apparent. Instead, the impression of reconstruction results from the interaction of the semantics of comparative quantifiers with that of *tough*-constructions. Moreover, not only is reconstruction unnecessary to obtain the desired reading, reconstruction must in fact be blocked altogether to prevent overgeneration of readings. This result further supports the conclusion that scope reconstruction is altogether impossible in *tough*-constructions. Finally, these conclusions follow naturally from a base-generation account (Chomsky 1973).