UNLESS as a restrictor of non-universal quantifiers

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Problem
What are the constraints (semantic, pragmatic, cooccurrence) on unlesss as a restrictor of quantifiers?

Previous accounts
- von Fintel (92, 94) claims unlesss is a biconditional exceptive, enforcing a uniqueness condition:
  (1) \[ Q[C] M \quad \text{unless} \quad R := Q[C \setminus R] M \times S \subseteq C : Q[C \setminus S] M \rightarrow R \subseteq S \quad \text{Every student will pass unless they skip class.} \]
  \[ \rightarrow \] The class-skippers are the unique set of students falsifying universal passing.
- blocks unless with non-universals (e.g. MOST)
- Leslie (08) argues:
  (2) \[ Q[C] M \quad \text{unless} \quad R := Q[C \setminus R] M \times Q[C \setminus M] \rightarrow R \quad \text{Most students will pass unless they skip class.} \]
  \[ \rightarrow \] Most class-attending students pass and most passing students are not class-skippers.

Empirical data
- “Most Americans won’t go to church unless they have a need.” [One News Now 2015]
- “California is so dry, some diners won’t get water unless they ask.” [NPR 2014]
- “Few people can be happy unless they hate some other person, nation, or creed.” [Bertrand Russell 1955]
- “Smoking kills half of smokers unless they quit.” [Gates Foundation 2014]

Intuitions
**Most students will pass unless they skip class.**

### Scenario A:
- [STUDENT \(-\) SKIP] = 110
- [STUDENT \& SKIP] = 10
  - Leslie: FALSE, Intuitively: TRUE

### Scenario B:
- [STUDENT \(-\) SKIP] = 8
- [STUDENT \& SKIP] = 4
  - Leslie: TRUE, Intuitively: FALSE

Prior results (Nadathur/Lassiter 2014)
- unless assertorically equivalent to if not:
  (7) \[ Q[C] M \quad \text{if not/unless} \quad R := Q[C \setminus R] M \quad \text{Every student will pass unless they skip class} \]
  \[ \Rightarrow \] Every non-skipping student will pass.
- sensitive to across-the-board condition, analyzed as a presupposition:
  (8) \[ \neg Q[C \setminus R] M \]
  It’s not the case that all class-skippers pass.

Predictions for Most/some/few marbles have a dot unless they are blue.
- Nadathur/Lassiter: TRUE (high agr.) if Q red marbles have dots
  - UNACCEPTABLE (low agr.) if Q blue marbles have dots as well
- Leslie: TRUE if Q red marbles have dots, and Q dotted marbles are red.

Experimental data

<table>
<thead>
<tr>
<th>Q</th>
<th>MOST</th>
<th>SOME</th>
<th>FEW</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data and preds, Q=&quot;most&quot;, non-tgt prop=0.8</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Data and preds, Q=&quot;some&quot;, non-tgt prop=0.4</td>
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<td></td>
</tr>
<tr>
<td>Data and preds, Q=&quot;few&quot;, non-tgt prop=0.2</td>
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</tbody>
</table>

Controls

### MOST across conditions:

### SOME across conditions:

### FEW across conditions:

### Design (Amazon MTurk)
- forced choice T/F
- quantified if not/unless
- variable: percent of target marbles with dots
- 373 participants, native English-speaking
- 48 items per participant: 24 test, 24 fillers/controls

Interpretation
- consistent with predictions about assertive content (7)
- support pragmatic view
- acceptance rates for predicted presupposition failure conditions (cf. 8) unexpectedly high
- once variable quantifier interpretation is accounted for, results suggest that non-asserted content is interpreted more flexibly than in (8)

Conclusions
- consistent with assertive content in N/L’14 if (8) is a reflex of conditional strengthening:
  (9) S’s utterance: “q COND p” generates the inference that S is unwilling/unable to commit to unconditional q.
- (9) is a Need-a-Reason implicature (Lauer 2013)
- for if not, presuppositional (S’s responsibility) for unless
- (9) is accommodated by a contextual “salient difference” (between R and C \(-\) R w.r.t M)

Future directions
- How can the notion of “salient difference” be investigated and manipulated?
- Why is it strongly realized as (8) with universal quantifiers, less strong with non-universals?
- What degree of freedom does it introduce? Can this be reduced to causal dependence?
- What is the relevant notion of “presupposition” as the speaker’s responsibility (as opposed to implicature)?

Selected references