Implicatures from deficient scales

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Implicatures and scales

- Scalar implicature and some of its limitations
- Two experiments...
  - Comparative quantifiers – SIs drawn from a scale involving gaps
  - Inconsistently available SIs – drawn from a scale of unequal lexicalisation
- ...and their implications for our general view of SIs

Scalar implicatures

- Arise classically from speaker's use of weaker term on informational scale (under certain assumptions):

  A. Did your students pass the exam?
  B. <u>Some</u> of them did.

  => <u>Not all</u> of B's students passed the exam

  A. This water is <u>warm</u>.

  => This water is <u>not hot</u>

  A. Jane <u>likes</u> Tom.

  => Jane <u>does not love</u> Tom

- Cancellable, etc.

Implicature failure in the numerical domain

- SIs apparently available from bare numeral n

- Dubious for "more/fewer than n" (Fox and Hackl 2006)
  "at least/most n" (Krifka 1999)

  "John has more than three children"
  => It is not true that John has more than four children (?)
  => John has exactly four children (?!)

- Counterintuitive

- Robustly fails with untrained participants (Geurts et al. 2010)

- Claim: "more than n" etc. fail to enter into predicted scale
  <more than n, more than n+1, …>

Curious…

- <more than *n*, more than *n+1*, …> not a Horn scale

- Yet "more than *n*" => *something…*
    - [??]"More than 100 students attend this university"
    - Restriction not attributable to semantic considerations alone…
    - …suggesting that some kind of pragmatic enrichment should be available here

- What's the restriction?
- What's the enrichment?

Establishing the appropriate scale(s)

- <more than 100, more than 101, …> fits (arguably) letter but not spirit of Horn scale
  - Equal lexicalisation precludes inferences involving e.g. marked forms
    - "hot" ?=> "not very hot"
    - "loves" ?=> "not adores"
  - Here, stronger form potentially not used on basis of greater effort
- Non-round numbers held to be less accessible
- Numeral scales should reflect this:
  - <more than 60, more than 70, more than 80, …>
  - <more than 100, more than 200, more than 300, …>
  - <more than 100, more than 1000, more than 10,000, …>

Explaining "more than" implicature failure

- "more than 100" !=> "more than 101"
  - Is there any reason, other than truth, for a speaker to choose the weaker statement rather than the stronger?
  - **YES**
  - 101 is a less salient number than 100
    - Disfavoured communicatively

- Hearer:
  - Speaker chose to say "more than 100"…
  - …but maybe that was just to use a salient numeral…
  - …so the implicature is not available

But recovering part of the implicature

- Speaker says "more than 100"
  - What if "more than 1000" was the case?
  - Numeral just as salient
- Hearer should be able to conclude that
  - "more than 1000" isn't the case
  - "more than 200" probably isn't
  - "more than 150/125/110" might not be…
- Seems to match our intuitions tolerably well

Experimental verification

*Information:* A newspaper reported the following.

"[Numerical expression] people attended the public meeting about the new highway construction project."

Question: Based on reading this, how many people do you think attended the meeting?

Between _____ and _____ people attended [range condition]

_____ people attended [single number condition].

Cummins, Sauerland and Solt (submitted)

Experimental verification
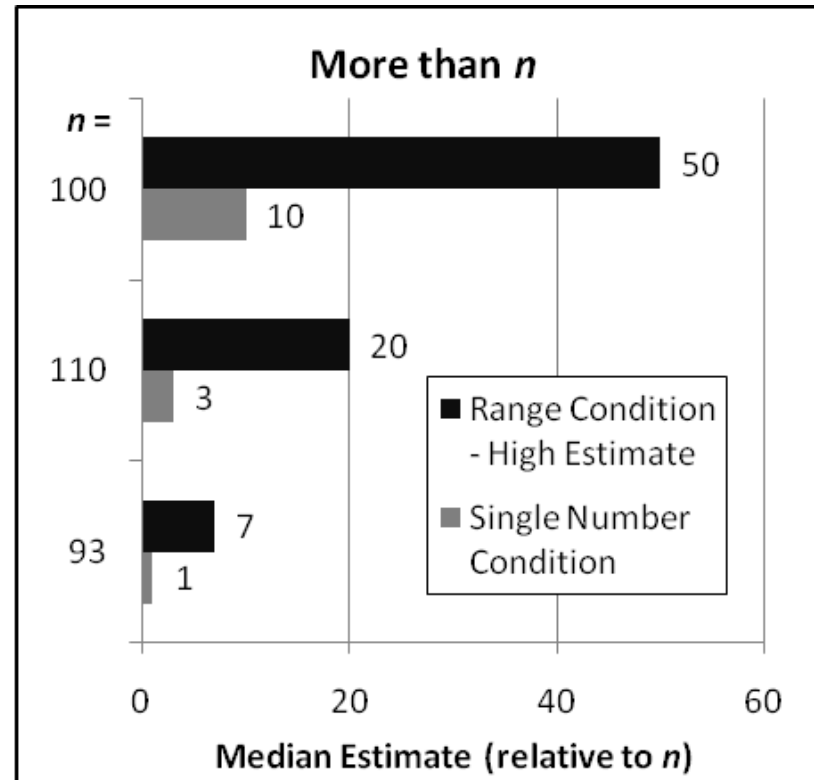
Fielded on MTurk: 100 participants per condition

ANOVAs show significant effects in both conditions (p < 0.05)

Comments reflect explicit awareness of this reasoning

Equal lexicalisation?

- Numeral salience looks like proxy for equal lexicalisation in the numeral domain (and conditions SIs)

- On the other hand, have notional scalar implicatures p => not-q arising from scale $<p, p \& q>$ when stronger statement meets certain criteria (relevance)

- For such scales, how do we establish q?

- Idea: closeness of semantic association
    - Encourages hearer to reflect on possibility that specific closely-related statements could have been made
    - Horn scales constitute extreme case of this closeness

Pilot study
(with Bart Geurts, Natalia Zevakhina)

- Correlating cloze test responses (and presence or absence of stronger alternatives) with availability of SI

  - (Cloze test as proxy for measure of perceived semantic closeness)

i.e. ask group A for alternatives to underlined terms

       The water was <u>warm</u>

and ask group B for judgements of implicature (in context)

       warm => not hot

- Rate at which group A give stronger scalemates highly correlated with rate of SI for terms in group B

Matters arising

- ▪ Nature of semantic closeness

  - ▪ Could pure co-occurrence suffice?

  - ▪ Could we then get systematic SIs *across* semantic domains??

- ▪ Nature of propositional representation

  - ▪ Are these inferences arising at a sub-propositional level?

- ▪ Nature of the semantics-pragmatics interface

  - ▪ View of SIs as something intermediate between default and contextualised...

Summary

- SIs from comparative quantifiers such as "more than"
  - Conditioned by numeral salience/granularity
  - Explicable in terms of natural generalisation of Horn scale criteria
- SIs from scales not equally lexicalised
  - Known challenge to theories
  - Possible motivation for alternative approaches to SI based on more network-like view of lexicon