Investigating the distribution of *some* (but not *all*) implicatures using corpora and web-based methods

1. Introduction

In previous literatures, lexicalized scalar implicatures have long been accepted as belonging to the class of Generalized Conversational Implicature (GCI), which assume scalar implicatures arise as a matter of default, independently of context. However, the main grounds for this classification are intuition-based, though this classification is crucial not only to theories of the conditions under which scalar implicatures arise, but also to theories of how they are processed. According to Degen, the two main rival processing theories of scalar implicature, the Default model and the Literal-First hypothesis make the Homogenity Assumption (HA), which is the main assumption underlying the classification of scalar implicature as GCI. Overturing HA would call into question the testablility of these two processing theories. Therefore, this study is set to test the main assumption – Homogeneity Assumption.

Homogeneity Assumption: lexicalized scalar implicature constitutes a homogeneous class of implicatures.
- ✓ <u>Strength invariance:</u> scalar implicatures **have no or little variability** in the degree to which they arise
- ✓ <u>Context independence:</u> scalar implicatures arise **independently of context**

Degen (submitted) proposes an alternative view: probabilistic pragmatics
- ✓ Implicature strength can **vary**, and it should be predictable from features of context. Conversational implicatures exhibit different ***degrees*** of context-dependence.

2. Testing the Homogeneity Assumption
Method: corpus investigation & web-based rating tasks

2.1 *Investigating corpus* (Penn Treebank Switchboard)
- ● Analyzing 1363 target cases, eliminating 359 cases (20.5%) with singular count nouns and 26 cases only with *some*

2.2 *Collecting implicature ratings* (a test of **strength invariance**)
<u>Method:</u> paraphrase rating task (243 participants, 100+ blocks, 20 items/block)

(11) a. I like, I like to read some of the philosophy stuff.
      b. I like, I like to read some, but not all, of the philosophy stuff.
(12) a. And I'll take some time and do that with her.
      b. And I'll take some, but not all, time and do that with her.

Results & discussion:

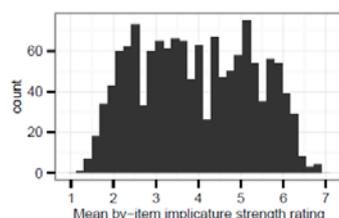A substantial amount of variation in implicature rating across items

Figure 1   Distribution of mean per-item ratings.

Example sentences from the lower, medium, and upper ratings (p.14-15)

2.3 *Analyzing the role of contextual cues* (a test of **context independence**)

Cue 1: the partitive form

Examples: (18) Alex ate some of the cashews.

(19) Alex ate some cashews.

Results:

✓ 368 (27%) of 1363 cases in corpus with partitives, among them 26.8% headed by pronouns or demonstratives.

✓ the explicit partitive cases got higher implicature rating than the non-partitive cases (β =1.01, SE=0.05, t=22.05, p<.0001)
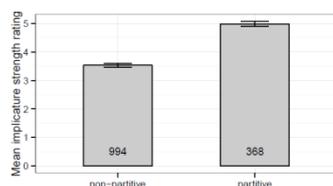

Figure 2   Means of mean by-item ratings for partitive and non-partitive *some*-NPs.[18]

Implicatures:

✓ The Homogeneity Assumption seems to be **more warranted when the some-NP is overtly partitive.**

✓ The implicature is not guaranteed despite the presence of partitive (only 25% of ratings were 7s, and 23% of ratings were still below the midpoint of the scale).

■ Example sentences (p.20)

Cue 2: determiner strength

Tasks: rating determiner strength

Similarity of each original utterance to the same utterance without *some (of)* (Examples in p.22)

(27) *Weak use*
    a. But my son needed sm money.
    b. But my son needed money.
(28) *Strong use, partitive*
    a. And some of the people in our church use birth control.
    b. And the people in our church use birth control.
(29) *Strong use, non-partitive*
    a. Some history books are pretty scary.
    b. History books are pretty scary.

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Results:

- ✓ Partitive cases got much lower similarity rating than non-partitive cases (p.24 Fig. 3, the right panel), suggesting determiner strength ratings correlated strongly with the proposed diagnostics in Table 2 (p.22).
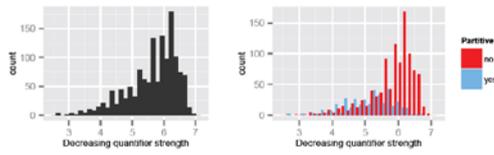- ✓ The stronger the use of *some*, the stronger the support for a scalar inference.

Figure 3   Distribution of mean by-item strength ratings overall (left) and conditioned on whether or not the *some*-NP was overtly partitive (right). Higher ratings indicate weaker determiner uses.
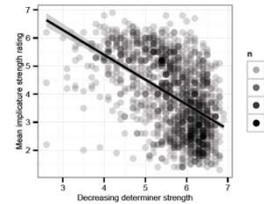
Figure 4   Mean by-item implicature rating as a function of decreasing determiner strength. Opacity of each point indicates the contributing number of data points (i.e. darker dots indicate more contributing cases).

Cue 3: discourse accessibility

Method: corpus analysis

- ✓ **Linguistic mention; Topicality/subjecthood; Modification**

Prediction: All these three factors could affect scalar implicature strength in different ways, either in a gradient way, or in a categorical way
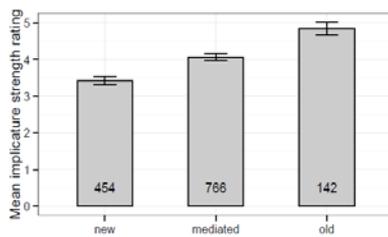
Results:

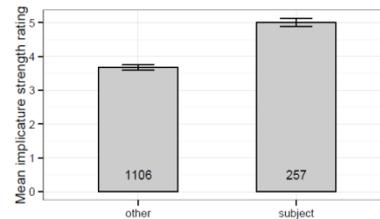**Figure 5**   Means of mean by-item ratings for old, mediated, and new embedded NP referents.

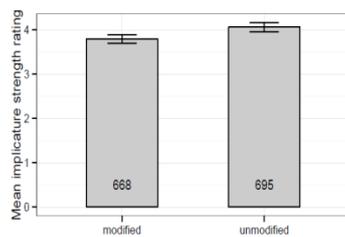**Figure 6**   Means of mean by-item ratings for subject and other *some*-NPs.

Figure 7   Means of mean by-item ratings for modified and unmodified *some*-NPs.
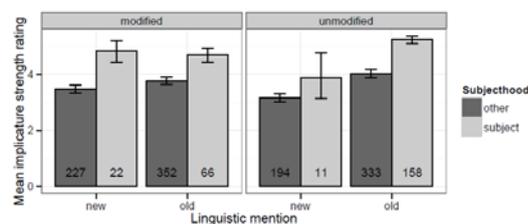
Figure 8   Means of by-item mean implicature strength ratings by linguistic mention (old/new embedded NP referent), subjecthood (subject/other *some*-NP), and modification (modified/unmodified embedded NP).[26]

- ● Evidences show both gradient and categorical effects of discourse accessibility on implicature strength.
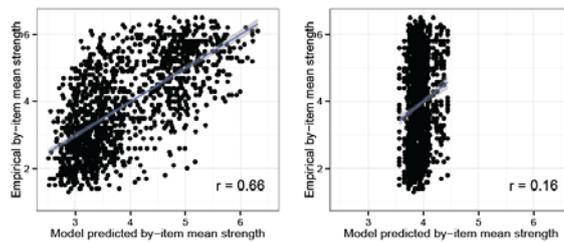
2.4 Model evaluation

Figure 9   Scatterplot of empirical vs. predicted mean by-item strength ratings for
final model (left panel) and model with only by-participant intercepts
(right panel). Blue lines indicate best linear fit.

From Fig. 9, we can see the final model provides a quite reasonable fit to the data:

- ✓ It clearly predicts a much wider range of values than the basic model which only accounts for participant variablility;
- ✓ Its predictions are much more highly correlated with the empirical data ($r = .66$) than the basic model predictions are ($r = .16$).
- ● Causes of residual variability (p. 33)

3. Summary and implications of the experimental results

3.1 *Summary*

- ✓ Scalar implicatures from *some* to *not all* show much more variation than expected under the Homogeneity Assumption.
- ✓ Implicatures strength is probabilistically modulated by various features of context.

3.2 *Implications*

- ✓ GCI-PCI distinction is no longer necessary in terms of scalar implicatures, different implicature types may be more or less context-dependent, now the challenge is to quantify the degree of context-dependence for different implicature types.
- ✓ Two alternative explanations for 'costly implicature' effects: 1) the Literal-First hypothesis; and 2) the less predictable interpretation is arrived at more slowly.

4. Conclusion

- ✓ evidence against the Homogenity Assumption
- ✓ the feasibility of large-scale experimental studies of pragmatic phenomena