Distinguishing the SAID from the IMPLICATED Using a Novel Experimental Paradigm

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What is SAID (1968/89)

- the truth-conditional meaning of a sentence ("closely related to the conventional meaning of the words…uttered")
- includes those contextual elements required for truth-conditional meaning (e.g., reference resolution, indexicals, disambiguation), henceforth NECESSARY CONTEXTUAL ELEMENTS (NCEs)
Grice: SAYING vs. IMPLICATING

What is IMPLICATED

• CONVENTIONALLY vs. CONVERSATIONALLY

  – CONVERSATIONAL IMPLICATURES
    • Generalized (GCIs) vs. Particularized (PCIs)
      ➢ GCIs, not PCIs, arise under normal circumstances

• Cancelable
  ➢ Not part of truth-conditional meaning, i.e., not part of what is said

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Post-Gricean Approaches

Sperber & Wilson 1986
Bach 1994
Récanati 1997
Carston 2002

• Grice’s conversational implicatures intrude on truth-conditional meaning when they fall under the scope of logical operators.

• Speakers do not access Grice’s *what is said*. 
An Example

Adapted from Nicolle and Clark (1999)

Irene: Why aren’t the guys rehearsing tonight?
Sam: Robert broke a finger last night.

(a) There is a finger such that Robert broke it the night prior to the day of utterance.
(b) Robert broke his own finger the night prior to the day of utterance.
(c) Robert can’t rehearse the night of the utterance.

Grice: What is implicated = (b) & (c)
Post-Griceans: What is implicated = (c)
Experimental Approaches

On-line studies:

- Bott & Noveck 2004
- Bezuidenhout & Morris 2004
- Breheny, Katsos & Williams 2006

- Primarily concerned with questions about processing of GCIs/inferences
- Do not directly address whether speakers distinguish between GCIs and truth-conditional meaning
Experimental Approaches (cont.)

Off-line studies:

Gibbs & Moise 1997
Nicolle & Clark 1999
Bezuidenhout & Cutting 2002

- For PCIs, speakers routinely distinguish them from *what is said*.
- For GCIs, speakers routinely treat them as part of *what is said*, consistent with post-Gricean approaches.
Unresolved Issues 1

• Can speakers isolate a level of meaning corresponding to the Gricean notion of \textit{what is said} that is exclusive of GCIs?

– Previous experiments suggest that speakers cannot, but do not address the issue of truth-conditional meaning, instead asking participants to identify \textit{what is said}. 

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Unresolved Issues 2

• Is there empirical evidence for the various types of GCIs that have been discussed in the literature?

  – Stimuli from previous experiments do not reflect the full range of GCIs discussed in the literature, and there have been no attempts to investigate systematically whether different types have any bearing on whether GCIs are distinguishable from what is said.
Unresolved Issues 3

- Can we improve upon previous methodologies?
  - In previous experiments -- even when the instructions introduced participants to Gricean distinctions -- it is unclear what informed their judgments, and whether and to what degree they were guided by the instructions.
Our Study

Do speakers, when given consistent criteria in an experimental setting, systematically distinguish:

(a) between GCIs and truth-conditional meaning

(b) among the various GCI types as discussed in the literature?
Methods: Instructions

Participants read conversations between two characters, Irene and Sam, followed by a FACT. They were then asked to evaluate the truth of an underlined statement given that FACT.
Methods: The Three Conditions

- Literal Lucy
- Literal no Lucy
- No Literal no Lucy
Methods: Introducing Literal Lucy

Literal Lucy interprets everything literally and misinterprets expressions such as figurative language and indirect speech acts.

Example:
Frank: Hey, Lucy, can you tell me what time it is?
Literal Lucy: Yes, I can!
Frank: So...?
Methods: Example Conversation from the Instructions

Irene: Hey, Sam. Do you know who wrote *Pride and Prejudice*?

Sam: A British woman wrote it, and her last name was Austen.

FACT: Jane Austen, a British woman, wrote *Pride and Prejudice*. 

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Methods: “Literal Lucy” Condition
Instructions

Irene: Hey, Sam. Do you know who wrote *Pride and Prejudice*?

Sam: A British woman wrote it, and her last name was Austen.

FACT: Jane Austen, a British woman, wrote *Pride and Prejudice*.

Given this FACT, Literal Lucy would say that the underlined sentence is:

T or F
Methods: “Literal no Lucy” Condition

Instructions

Irene: Hey, Sam. Do you know who wrote *Pride and Prejudice*?

Sam: A British woman wrote it, and her last name was Austen.

**FACT:** Jane Austen, a British woman, wrote *Pride and Prejudice*.

Given this FACT, the underlined sentence when interpreted literally is:

T or F

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Methods: “No Literal No Lucy” Condition

Instructions

Irene: Hey, Sam. Do you know who wrote *Pride and Prejudice*?

Sam: A British woman wrote it, and her last name was Austen.

**FACT:** Jane Austen, a British woman, wrote *Pride and Prejudice*.

Given this FACT, the underlined sentence is:  

**T** or F
Methods: Example Stimulus

Irene: I heard you all went shopping. What did Harry buy?

Sam: Harry bought two books.

FACT: Harry bought the *Lord of the Rings* trilogy.

Given this FACT, Literal Lucy would say that the underlined sentence is:

T or F

0
1 not at all
2 confident
3 completely confident
4

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Methods: Materials

Participants were presented with 88 short conversations of the following types:

- 28 controls: 14 contradictions & 14 entailments
- 16 NCE fillers: 4 examples of 4 different types
- 44 GCI target items: 4 examples of 11 different GCI types discussed in the literature

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Methods: Materials

• The 44 GCI stimuli were adapted from types found in the literature and classified according to Levinson’s (2000) taxonomy.

• Visit our website for examples of all the materials. [http://www.adhasldjapsapo.j/~meredith/LiteralLucyBLAHSADJAS.html](http://www.adhasldjapsapo.j/~meredith/LiteralLucyBLAHSADJAS.html)
Methods: Examples of GCIs (Q-based)

- Quantifiers and modals
- Gradable adjectives
- Closed-discrete scales
- Cardinals
Methods: Examples of GCIs (I-based)

- Comitatives
- Bridging inferences
- Conjunction buttressing
- Argument saturation
Methods: Examples of GCIs (M-based)

- Noun reduplication
- Verb reduplication
- Verbal periphrasis
Methods: Participants and Procedures

- Participants: 68 Northwestern University students and community members, all native speakers of North American English

- The task took 30-40 minutes.
## Interpreting the GCI Results

<table>
<thead>
<tr>
<th>% of TRUE Responses</th>
<th>Does the Fact Conflict with Underlined Sentence?</th>
<th>Is the GCI Part of Truth-Conditional Meaning?</th>
</tr>
</thead>
<tbody>
<tr>
<td>HIGH</td>
<td>NO</td>
<td>NO</td>
</tr>
<tr>
<td>LOW</td>
<td>YES</td>
<td>YES</td>
</tr>
</tbody>
</table>
Results: Effect of Stimuli Types

• Main effect of stimulus type
  F(3, 195) = 1.06 p<0.00

• No main effect of instruction type
  F(2, 65) = 1.10 p>0.05

• Interaction of stimulus type with instruction type
  F(6, 195) = 2.62 p<0.02
Results: Effect of Stimuli Types

Stimuli type across conditions

Average True

<table>
<thead>
<tr>
<th>Stimuli</th>
<th>Contradictions</th>
<th>Entailments</th>
<th>GCIs</th>
<th>NCEs</th>
</tr>
</thead>
<tbody>
<tr>
<td>LL</td>
<td>10</td>
<td>90</td>
<td>60</td>
<td>10</td>
</tr>
<tr>
<td>LnL</td>
<td>1</td>
<td>90</td>
<td>50</td>
<td>5</td>
</tr>
<tr>
<td>nLnL</td>
<td>1</td>
<td>90</td>
<td>50</td>
<td>5</td>
</tr>
</tbody>
</table>

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Results: GCI Types

• Main effect of stimulus type
  \( F(2,130) = 36.88, \ p<0.00 \)

• Main effect of instruction type
  \( F(2,65) = 3.29, \ p<0.05 \)

• No interaction between stimulus type and instruction type
  \( F(4,130) = 0.86, \ p>0.05 \)
Results: GCI Types

GCI types * condition

<table>
<thead>
<tr>
<th>GCIs</th>
<th>% True</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td></td>
</tr>
<tr>
<td>M</td>
<td></td>
</tr>
<tr>
<td>Q</td>
<td></td>
</tr>
</tbody>
</table>

* F(2,65)=2.504 p<0.05 * F(2,65)=2.406 p<0.05

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Results: Median Scores in the Literal Lucy Condition by GCI Type

- **I-based Implicatures**
  - Comitatives: 83%
  - Conjunction Buttressing: 74%
  - Argument Saturation: 65%
  - Bridging Inferences: 63%
  - Verbal Periphrasis: 72%

- **M-based Implicatures**
  - Verb Reduplication: 41%
  - Noun Reduplication: 37%

- **Q-based Implicatures**
  - Gradable Adjectives: 83%
  - Quantifiers/Modals: 70%
  - Continuous Discrete Scales: 67%
  - Cardinals: 46%

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Discussion: I-based Implicatures

• As a group, less likely to be incorporated into truth-conditional meaning
  - high median scores (63-83%)
• As a group, less likely to be incorporated than Q- and M-based implicatures
  - highest average of medians (71%)
• As a group, more coherent than Q- and M-based implicatures
  - narrowest range in median scores (20%)
Discussion: M-based Implicatures

• Do not form a coherent group
  – considerable variation of median scores (37%-72%)
• Noun- and Verb-Reduplication are more likely to be incorporated into the truth conditional meaning (37% and 41%, respectively), while Verb Periphrasis is less likely to be incorporated (72%).
Discussion: Q-based Implicatures

• Considerable variation
e.g. Cardinals (46%), Quantifiers/Modals (70%),
  Gradable Adjectives (83%)
• The salience of alternative set members seems to affect the ease with which the relevant implicature is incorporated.

Example:
  More likely to be incorporated = <4, 3, 2>
  Less likely to be incorporated = <drop-dead gorgeous, pretty>
Conclusions

• Speakers are able to distinguish reliably between GCIs and truth-conditional meaning.

• Speakers do not treat all GCIs the same with respect to truth-conditional meaning.

• Instructions matter! When participants take an external perspective, they are more discriminating in their judgments about what is part of truth-conditional meaning than in other instruction conditions.
Acknowledgments

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