Presuppositions vs. Scalar Implicatures in Acquisition

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The overall project

Comparing processing and acquisition of:

• Implicatures
• Presuppositions
Introduction
Presuppositions

(1) The bear didn’t win the race
    ~The bear participated in the race
Indirect scalar implicatures

(2) Not all of the giraffes have scarves
   \sim Some of the giraffes have scarves
Direct scalar implicatures

(3) Some of the giraffes have scarves
\[ \sim \text{Not all of the giraffes have scarves} \]
Presuppositions vs scalar implicatures

Traditionally:

Presuppositions ≠ Scalar Implicatures

Recently:

Presuppositions = Indirect SI  \hspace{1cm} (Chemla, 2009; Romoli, 2012, 2014)
‘No inference’ interpretations

**ISI:** Not all of the giraffes have scarves...in fact, none of them do

**P:** The bear didn’t win the race...in fact, he didn’t even participate
Our Question:

Are presuppositions and ISIs the same?

Do children’s (and adults’) behave uniformly with them?
Previous Results
The acquisition of scalar implicatures

Children are less likely than adults to provide response based on an [+inf] interpretation of sentences like (4).

(stable across tasks & methodologies)

(Gualmini et al. 2001; Chierchia et al. 2001; Papafragou & Musolino, 2003 a.o)

(4) Some of the giraffes have scarves

Adults: Reject
Children: Accept
The acquisition of scalar implicatures

- ISIs studied much less, but existing results are similar to DSIs (Lidz & Musolino, 2006; Katsos et al., 2011).

(5) Not all giraffes have scarves

Adults: Reject
Children: Accept
The acquisition of presuppositions

• Very little research on acquisition (other than definite descriptions)

• **Predictions:** If presuppositions are on par with ISIs, each group should display a uniform pattern with these inferences

(7) The bear didn’t win the race

**Prediction**
Adults: Reject
Children: Accept
Experiment
Participants

• 30 monolingual English speaking children
  o 16 age 4;6 (4;2-5;5)
  o 14 age 7;3 (7;0-7;11)

• 20 monolingual English speaking adults
Procedure

- Sentence picture matching task with one hidden picture

(Covered Box Paradigm, Huang et al. 2013)
Materials

Presupposition
The bear didn’t win the race

[-inference]  [+inference]
Materials

*Indirect scalar implicature*

Not all of the giraffes have scarves

[-inference]  [+inference]
Materials

Direct scalar implicature

Some of the giraffes have scarves
Presupposition Trial

Intro: “Today, a group of animals raced each other in some running races”

Context Picture

Context picture description: “In the first race, the bear won the race”

Test sentence: “But, in the second race, the bear didn’t win the race”

Question: “Am I talking about the bear in this picture (visible), or the bear in this picture (covered)?”
Indirect Scalar Implicature Trial

Intro: “Today, a group of penguins and a group of rabbits went to the park”

Context Picture

Context picture description: “All of the penguins brought balls”

Visible Picture

Test sentence: “But, not all of the rabbits brought balls”

Covered Picture

Question: “Am I talking about the group of rabbits in this picture (visible), or the group of rabbits in this picture (covered)?”
Results
Results

- Covered Picture choice ≈ [+inference]
- Rate varied, based on both age and type of inference
P vs. ISI across age groups

- **P** and **ISI** not uniform
- Interaction between **P** and **ISI** for adults vs. children
P vs. ISI across age groups

Simple effects for Children:

P > ISI
P vs. ISI across age groups

Simple effects for Adults:

ISI > P
Additional Finding: ISI vs. DSI

• **Interaction & simple effects** between Implicature type and age group
  • Children = ISI > DSI
  • Adults = DSI > ISI
Discussion
Discussion

Evidence that presuppositions are different from ISIs (contra Chemla, 2009; Romoli, 2012, 2014)

- Strong difference between ISIs and P (cross-over interaction).

- Results more compatible with traditional perspective:
  
  ISIs and Ps as two separate inferences based on distinct mechanisms.
### Traditional perspective

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<tr>
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<th>basic meaning</th>
<th>derived meaning</th>
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</tr>
<tr>
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ISI: Gricean enrichment
P: Process that removes inference (e.g., Local Accommodation)
Derived meanings later in acquisition

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ADULTS

![Chart showing covered picture choices for different inference types: DSI, ISI, P, and InfType categories for 4-5yr and Adults groups.](chart.png)
### Derived meanings later in acquisition

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**ADULTS**

**CHILDREN**

![Graph showing covered picture choices for different inference types and age groups](image)
Adult Processing

- Derived meanings ([-inference]) for presuppositions are costly

(6) The bear didn’t win the race

Rejection [+inf]: Fast
Acceptance [-inf]: Slow

Chemla and Bott (2012), and Romoli and Schwarz (2014).
Discussion

- Implicatures with children vs. adults consistent with previous work (Noveck, 2001; Musolino & Lidz, 2006).

- ISI vs. DSI interaction is theoretically puzzling
  - Potential theoretical distinction
  - Potential processing differences (Schwarz & Romoli, 2014; Cremers & Chemla, 2013)

- But adult vs. children reversal goes beyond a simple difference
Future directions

• Comparing ISIs and Ps through:
  
  o Acquisition
    o Which changes in development lead to adult behaviour?
  
  o Processing
    ▪ Reaction-time
    ▪ Eye-tracking
Thank you

Thanks to:

• Collaborators:
  - Rosalind Thornton, Kelly Rombough, Dorothy Ahn, Emmanuel Chemla, Danny Fox, Clemens Mayr, Yasutada Sudo, Lyn Tieu, Neha Khetrapal.
  - Language Acquisition Lab (Macquarie University)

• Others:
  - Jacopo Romoli
  - Florian Schwarz
  - Stephen Crain
Development of Presuppositions:

7 year olds:

• Between 4-5 and adults for presupposition

• Like 4-5 on implicatures