Processing of Scalar Items in Embedded Position

An experimental study

Petra Augurzky, Michael Franke & Fabian Schlotterbeck

Seminar für Sprachwissenschaft & SFB 833
Eberhard Karls Universität Tübingen

Overview

1. background (Michael)
2. design (Petra)
3. results (Fabian)

Scalar Implicatures

Example

(1) Some of Kiki's friends are metalheads. (target)

(2) All of Kiki's friends are metalheads. (alternative)

(3) It's not the case that all of Kiki's friends are MHs. (not-(2))

(4) Some but not all of Kiki's friends are metalheads. ((1) & (3))

Scalar Implicatures

Neo-Gricean Recipe

- let $S(x)$ be a sentence in which scalar element x occurs (once)
- let $\text{Alt}(x)$ be a set of lexical alternatives to x
- let $S(y)$ be the sentence obtained by replacing x in $S(x)$ with y

$\Rightarrow$ utterance of $S(x)$ implicates:

$$\text{it's not the case that } S(y)$$
$$(\text{for all } y \in \text{Alt}(x) \text{ such that } S(y) \text{ implicates } S(x))$$

Scalar Items in Embedded Positions

In upward monotonic position

(5) All of the students read some of the papers.

In non-monotonic position

(6) Exactly one of the students read some of the papers.

Scalar Items in Embedded Positions

Global Enrichments

. . . see Neo-Gricean Recipe . . .

Local Enrichments

- $S(x)$ and $\texttt{Alt}(x)$ as before
- write $x\&\neg y$ for composite element of same type as x

  e.g., "some but not all"

$\Rightarrow$ utterance of $S(x)$ implicates:

$$S(x\&\neg y)$$

(for all $y \in \texttt{Alt}(x)$ such that ???)

Scalar Items in Embedded Positions

In upward monotonic position (Global)

(5) All of the students read some of the papers.

(7) All of the students read all of the papers.

(8) a. All of the students read some of the papers and not all students read all of the papers.

b. All read some and at least one did not read all.

In upward monotonic position (Local)

(5) All of the students read some of the papers.

(9) a. All of the students read some but not all of the papers.

b. All read some and no one read all.

Scalar Items in Embedded Positions

In upward monotonic position

3 kinds of readings:

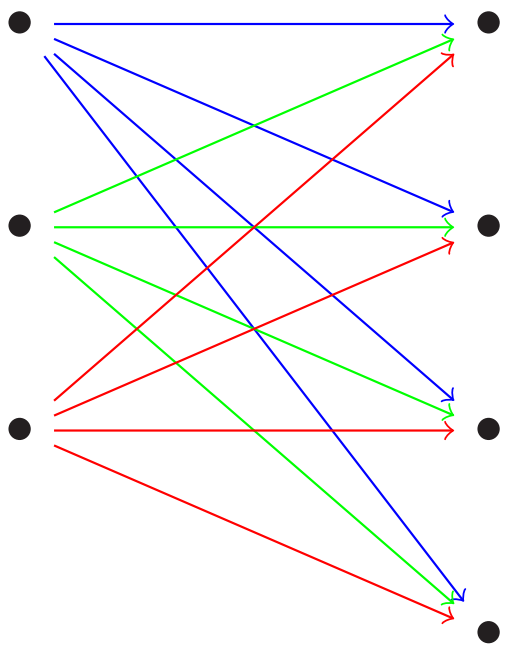
1. **literal**: all . . . some . . .
2. **global**: all . . . some . . . & not (all . . . all . . .)
3. **local**: all . . . some but not all . . .

with entailment relations:

$$\textsc{lit} \supset \textsc{glb} \supset \textsc{loc}$$

Scalar Items in Embedded Positions

In upward monotonic position (Entailment Relations)



"All of the dots on the left are connected to some of the dots on the right."

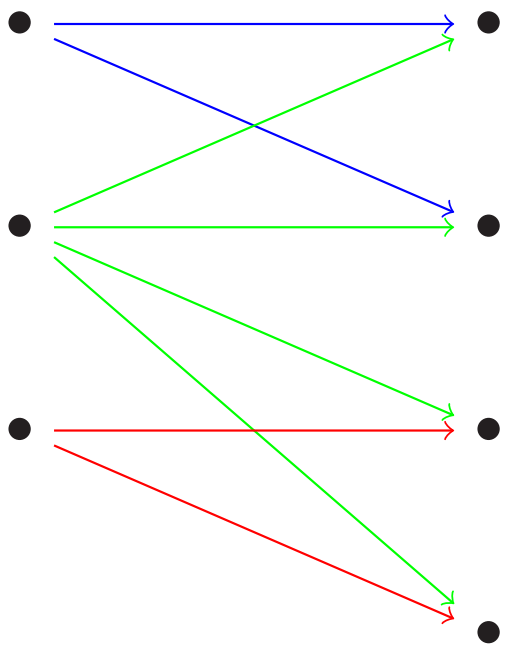
LIT: True

GLB: False

LOC: False

Scalar Items in Embedded Positions

In upward monotonic position (Entailment Relations)



"All of the dots on the left are connected to some of the dots on the right."

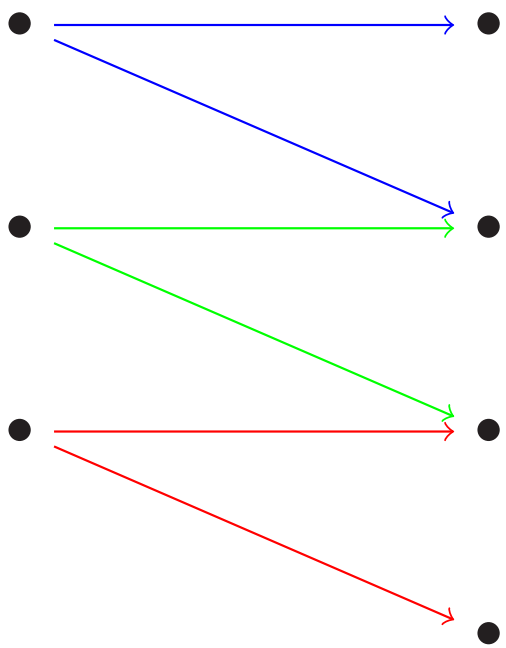
LIT: True

GLB: True

LOC: False

Scalar Items in Embedded Positions

In upward monotonic position (Entailment Relations)



"All of the dots on the left are connected to some of the dots on the right."

LIT: True

GLB: True

LOC: True

Scalar Items in Embedded Positions

In non-monotonic position (Global)

(6) Exactly one of the students read some of the papers.

(10) Exactly one of the students read all of the papers.

(11) a. Exactly one of the students read some and it's not the case that exactly one read all.

b. Exactly one student read some but not all and no one else read anything.

In upward monotonic position (Local)

(6) Exactly one of the students read some of the papers.

(12) a. Exactly one of the students read some but not all of the papers.

b. Exactly one student read some but not all and all of the others read all or nothing.

Scalar Items in Embedded Positions

In non-monotonic position

3 kinds of readings:

1. **literal**: exactly one . . . some . . .
2. **global**: exactly one . . . some . . . & not (exactly one . . . all . . .)
3. **local**: exactly one . . . some but not all . . .

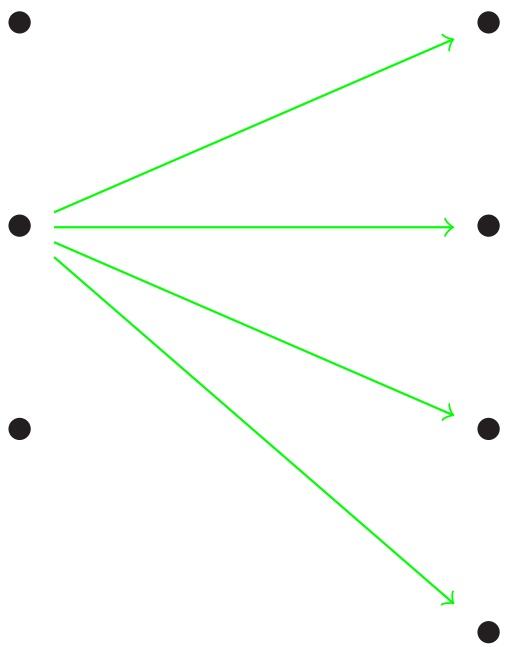
with entailment relations:

$\textsc{lit} \supset \textsc{glb} \subset \textsc{loc}$

$\textsc{lit} \not\supset \textsc{loc}$

Scalar Items in Embedded Positions

In upward monotonic position (Entailment Relations)



"Exactly one of the dots on the left are connected to some of the dots on the right."

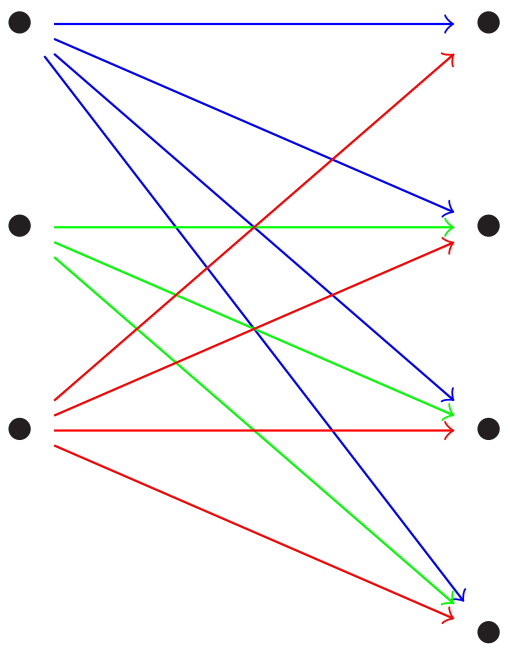
LIT: True

GLB: False

LOC: False

Scalar Items in Embedded Positions

In upward monotonic position (Entailment Relations)



"All of the dots on the left are connected to some of the dots on the right."

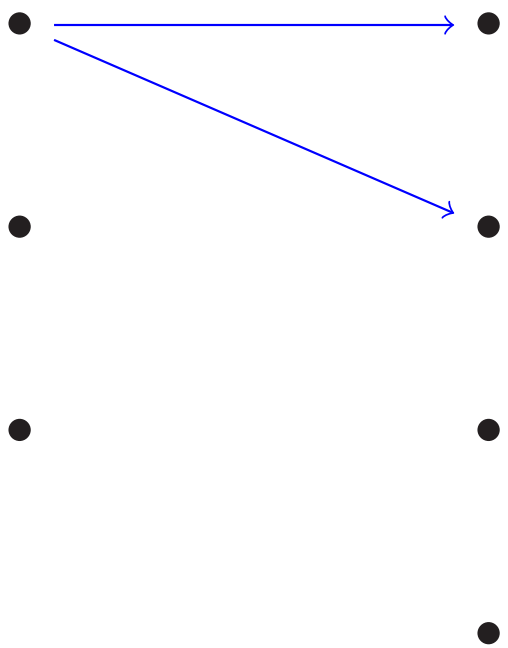
LIT: False

GLB: False

LOC: True

Scalar Items in Embedded Positions

In upward monotonic position (Entailment Relations)



"All of the dots on the left are connected to some of the dots on the right."

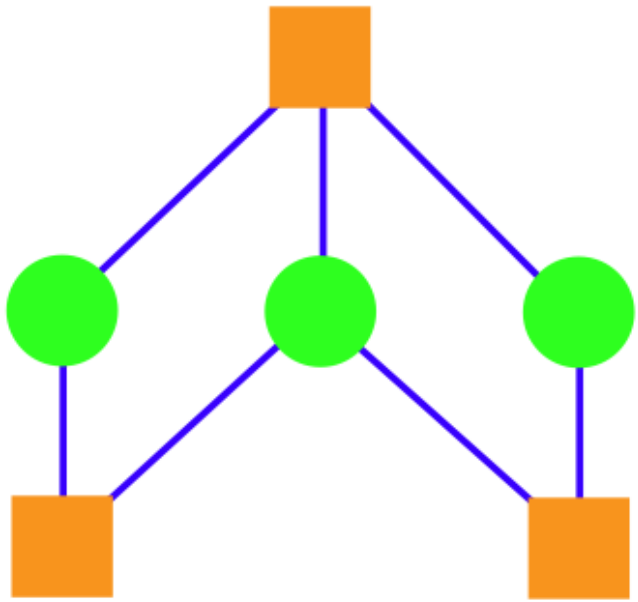
LIT: True

GLB: True

LOC: True

Experimental Study 1: Geurts and Pouscoulous (2009)

- picture verification task
- critical sentences:
  - AE All the squares are connected with some of the circles.
  - GE Exactly two squares are connected with some of the circles.
- critical pictures:
  - AE true for LIT and GLB; false for LOC
  - GE true for LOC; false for LIT and GLB
- results: no LOC-responses *at all*!

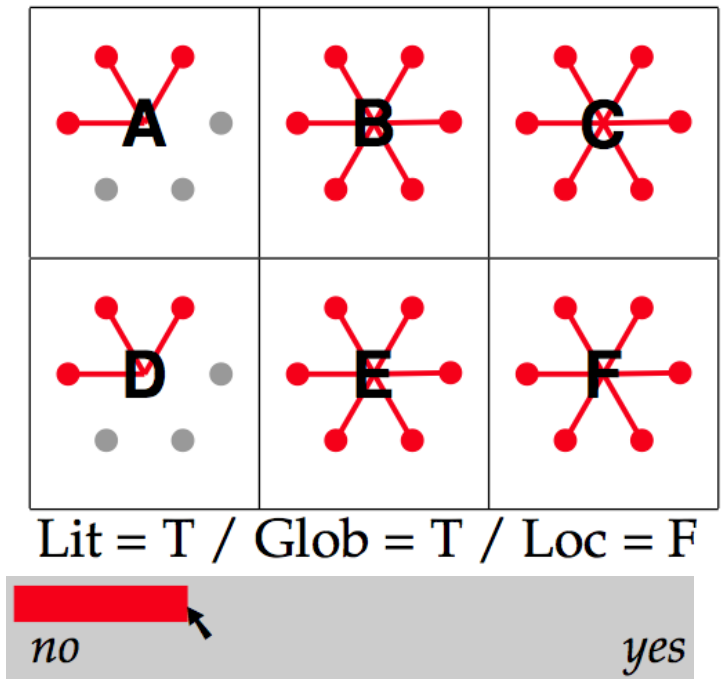


All the squares are connected with some of the circles.

☐ true ☐ false

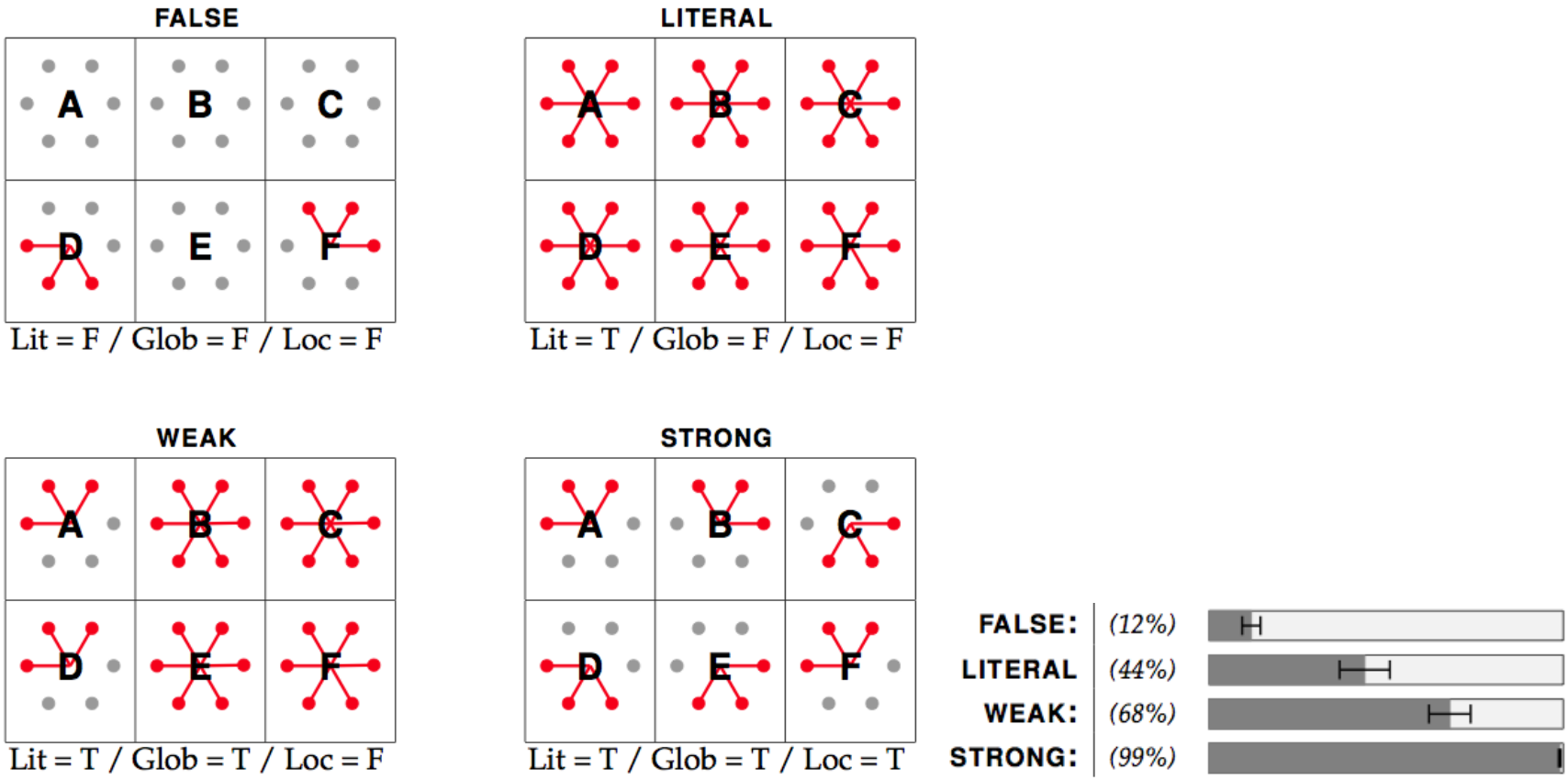
Experimental Study 2: Chemla and Spector (2010)

- "picture rating task":
  - continuous TV-judgements
- critical sentences:
  - AE Each letter is connected with some of its circles.
  - GE Exactly one letter is connected with some of its circles.
- critical pictures:
  - AE true for LIT and GLB; false for LOC
  - GE true for LOC; false for LIT and GLB
- results: attested LOC-responses!



Experimental Study 2: Chemla and Spector (2010)

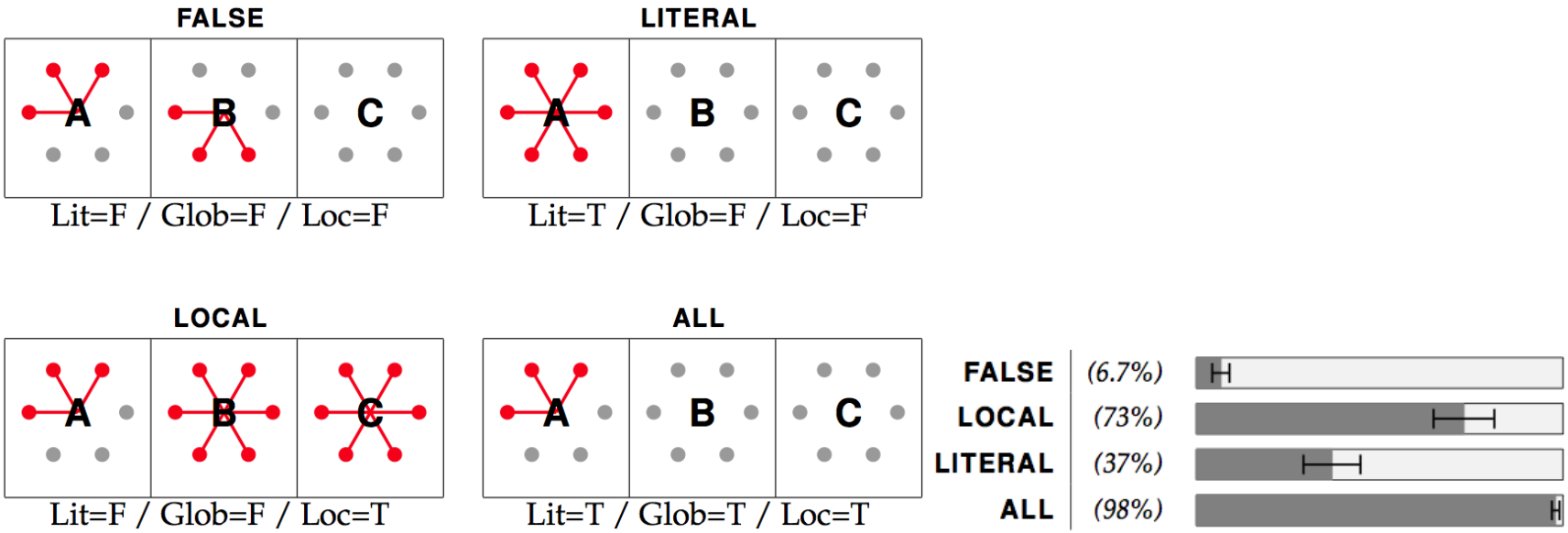
Results AE



"Each letter is connected to some of its circles."

Experimental Study 2: Chemla and Spector (2010)

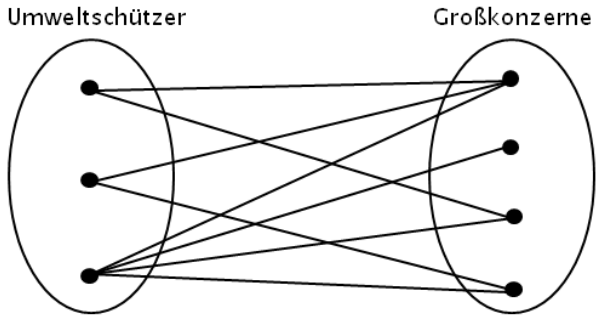
Results GE



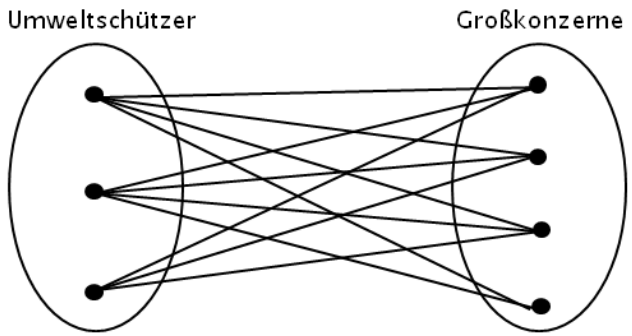
"Exactly one letter is connected to some of its circles."

Experimental Study 3: "K1"

- picture verification task
- critical sentences:
  - AE Für jeden dieser Umweltschützer gilt: er boykottierte einige dieser Großkonzerne.
  - GE Für genau einen dieser Umweltschützer gilt: er boykottierte einige dieser Großkonzerne.
- critical pictures:
  - AE true for LIT and GLB; false for LOC
  - GE true for LOC; false for LIT and GLB
- results: attested LOC-responses



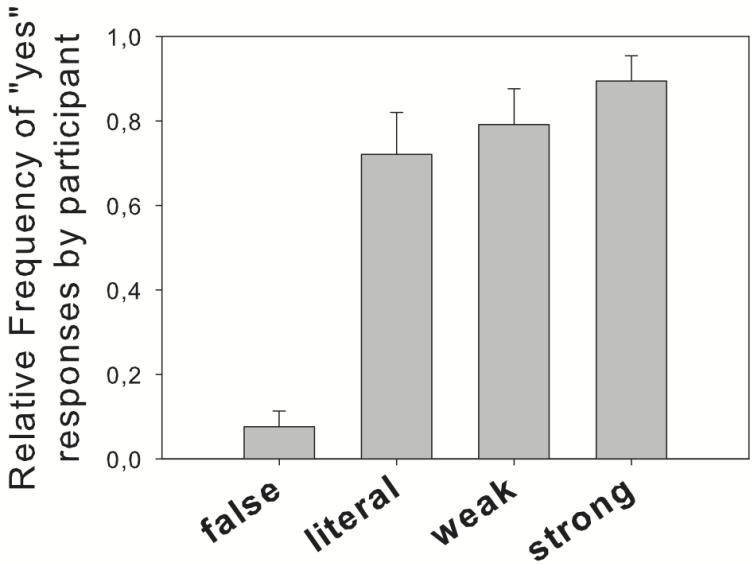
AE-condition



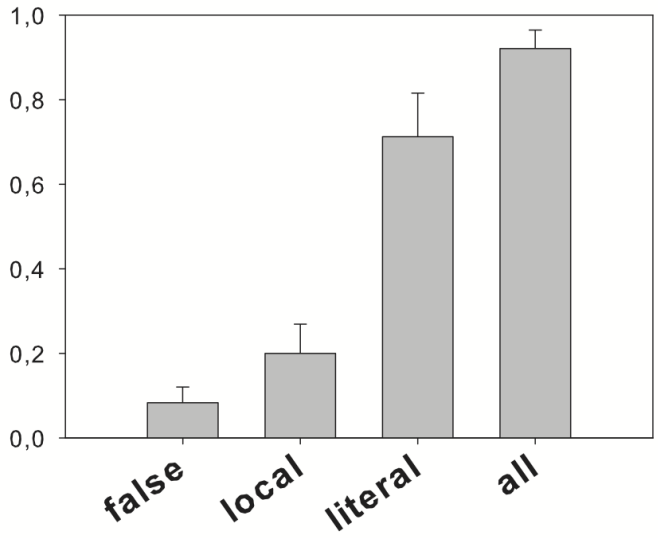
GE-condition

Experimental Study 3: "K1"

Results



AE-condition



GE-condition

References

Chemla, Emmanuel and Benjamin Spector (2010). "Experimental Evidence for Embedded Scalar Implicatures". Manuscript.

Geurts, Bart and Nausicaa Pouscoulous (2009). "Embedded Implicatures?!?" In: *Semantics & Pragmatics* 2.4, pp. 1–34.