

Exclusive disjunction: implicature or...

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Disjunction days

Exclusive 'or'

Sometimes 'or' is interpreted as excluding 'and':

(1) Harold bought a cat or a dog.

The standard explanation takes this to be a scalar inference arising from the competition between 'or' and 'and'.

Speaker expertise paradox

“In order to derive the clausal implicatures and the scalar implicature of *A or B* on the simple Gricean view, it has to be the case that the addressee assumes that the speaker is in an epistemic state in which she knows the truth value of *A and B*, but not the truth value of *A*, nor the truth value of *B*.” (Zondervan, 2010, p. 216)

Research question

Is the exclusive reading of 'or' due to a scalar inference?

Predictions

The robustness of a scalar inference is an increasing function of . . .

- REL: its relevance to the listener.
- COM: the competence of the speaker.
- PRI: the prior probability that the stronger alternative is false.

So if the exclusive reading of 'or' is a scalar inference, its strength should be similarly influenced by these factors.

Experiment 1

What is the effect of relevance, competence, and prior probability on the strength of the exclusive reading of 'or'?

Materials

We created 16 short stories, each ending with an utterance containing 'or', in which we varied the values of the three factors of interest:

Background story:

Leo is sponsoring a golf tournament, providing a luxury car for any hole-in-one. When Leo arrives at the tournament, his friend Hans comes up to him to tell about the events so far.

Utterance:

Hans tells Leo: "I heard someone just made a hole-in-one on the first or second hole."

In this story, we intuited that REL is high while COM and Pri are low.

Procedure

Each story was associated with four statements:

Relevance

It is important for Leo to know whether someone made a hole-in-one on both the first and second hole.

Procedure

Each story was associated with four statements:

Competence

Hans knows whether someone made a hole-in-one on both the first and second hole.

Procedure

Each story was associated with four statements:

Prior probability

If someone made a hole-in-one on the first hole, it is likely that she also made a hole-in-one on the second hole.

In the case of P_{R1} the utterance was *not* presented with the story, and another statement was created by switching 'first' and 'second'.

Procedure

Each story was associated with four statements:

Exclusive disjunction

From what Hans said we may conclude that the player in question didn't make a hole-in-one on both the first and second hole.

Procedure

Participants read 8 vignettes that were followed by 2 statements: 1 control and 1 target statement, and were instructed to indicate how likely they thought it was that the statement was true given the information in the background story.

Background: Mrs Gibbs is worried about her husband's health. Her friend Cindy, who is a waitress at a local restaurant, served Mrs Gibbs' husband yesterday.

Cindy says to Mrs Gibbs: 'Yesterday your husband had a steak or a beer.'

Statement: From what Cindy said we may conclude that Mr Gibbs did not have both a steak and a beer.

How likely do you think it is that the statement is true, given the information in the background story?

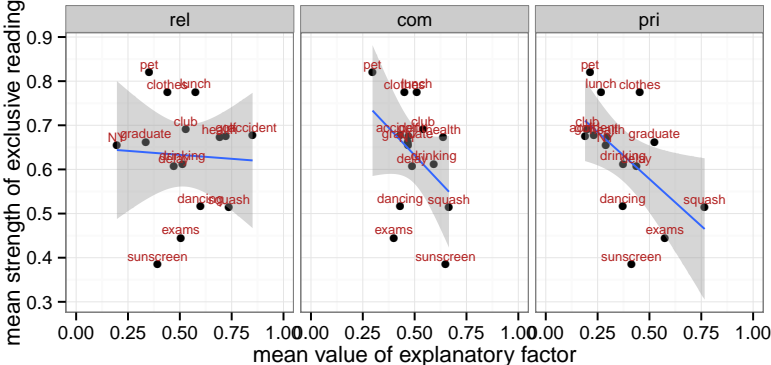
certainly false

certainly true

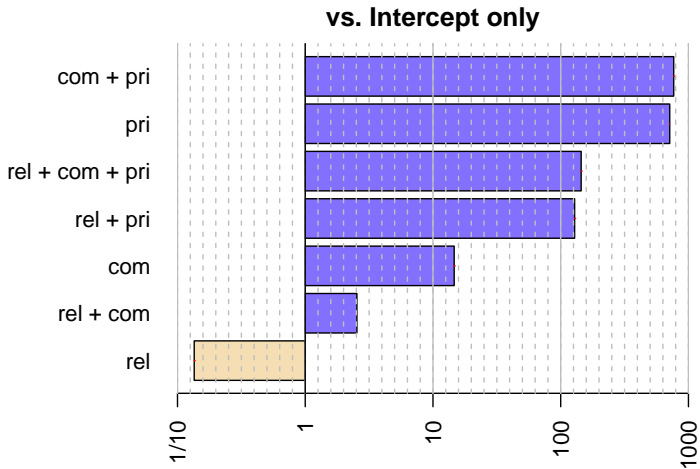


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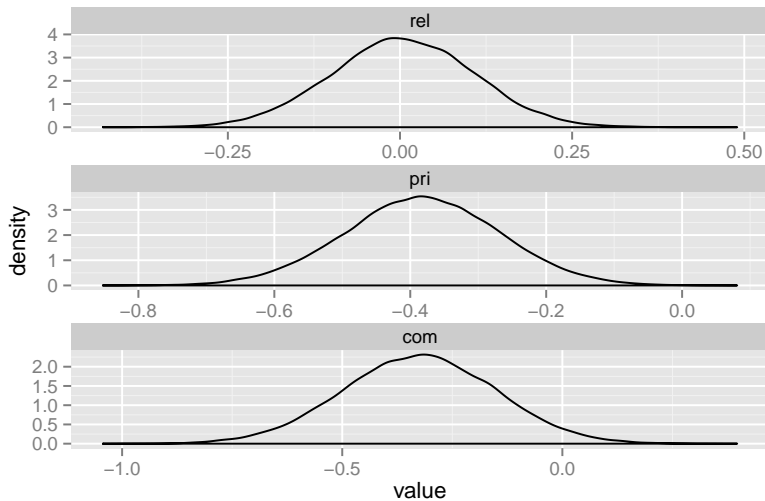
Results



Analysis



Analysis



Results

- The relevance of the statement with 'and' for the hearer has no effect on the strength of the exclusive reading.
- If the speaker knows whether the statement with 'and' is true or false, the exclusive reading becomes weaker.
- The exclusive reading becomes stronger if the statement with 'and' is a priori less probable.
- Competence plays the opposite role of what is expected if the exclusive reading of 'or' is due to a scalar inference.

Experiment 2

Does our task measure what it aims to measure? To answer this question, we conducted the same task with statements containing 'some' instead of 'or'.

Materials

We created 16 short stories, each ending with an utterance containing 'some', in which we varied the values of the three factors of interest:

Background story:

Henry is in the hospital because he broke his arm in a skiing accident. His aunt Bethany visited him yesterday and brought him some fruit and a bag of M&Ms.

Utterance:

Later, Henry tells his father: "I liked some of the M&Ms."

In this story, we intuited that REL is low while COM and Pri are high.

Procedure

Each story was associated with four statements:

Relevance

It is important for Henry's father to know whether Henry liked all of the M&Ms.

Procedure

Each story was associated with four statements:

Competence

Henry knows whether he liked all of the M&Ms.

Procedure

Each story was associated with four statements:

Prior probability

Henry liked all of the M&Ms.

In the case of P_{R1} the utterance was *not* presented with the story.

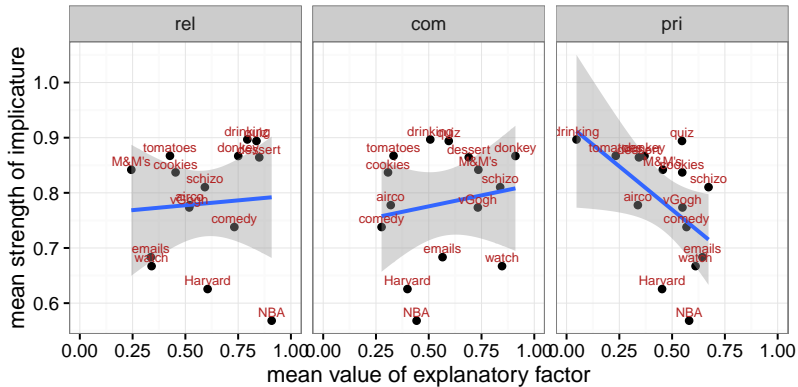
Procedure

Each story was associated with four statements:

Upper-bounded reading

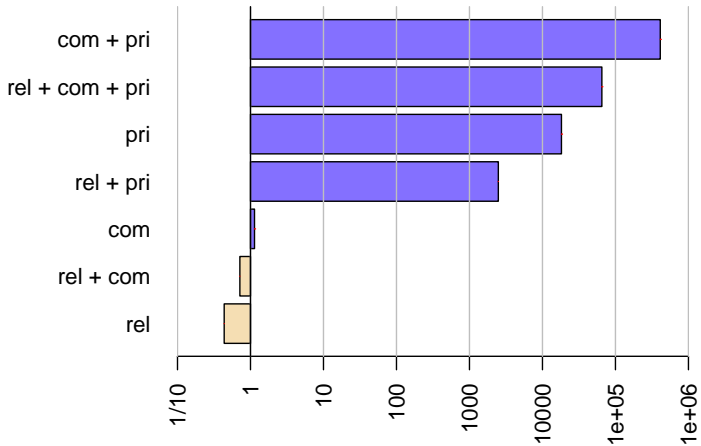
From what Henry said we may conclude that he didn't like all of the M&Ms.

Results

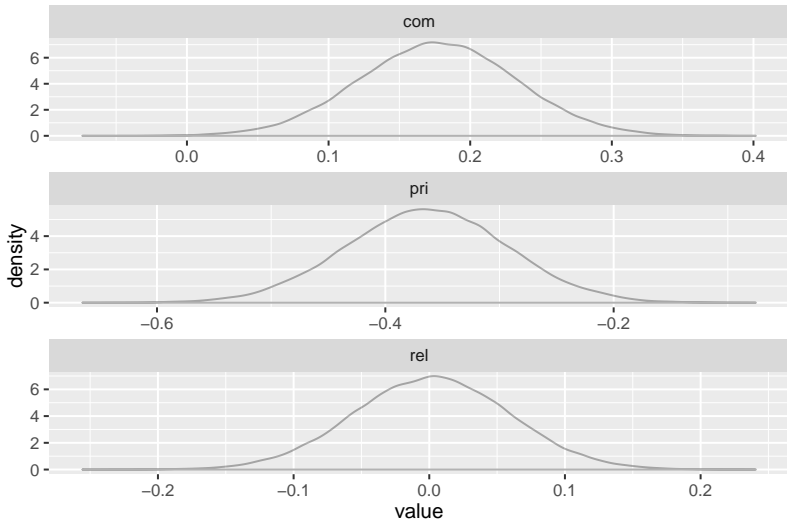


Analysis

vs. Intercept only



Analysis



Results

- The relevance of the statement with 'all' for the hearer has no effect on the strength of the upper-bounded reading.
- If the speaker knows whether the statement with 'all' is true or false, the upper-bounded reading becomes stronger.
- The exclusive reading becomes stronger if the statement with 'all' is a priori less probable.
- The effect of competence goes in the predicted direction.

Experiment 3

A promising alternative explanation for the exclusive reading of 'or' is that it is due to exhaustification of the disjuncts.

If this explanation is on the right track, we expect the strength of the exclusive reading to be correlated with the strength of the exhaustivity inference associated with an utterance of one of the disjuncts.

Materials

We used the same stories as in Exp. 1 but changed the utterances:

Background story:

Leo is sponsoring a golf tournament, providing a luxury car for any hole-in-one. When Leo arrives at the tournament, his friend Hans comes up to him to tell about the events so far.

Utterance:

Hans tells Leo: "I heard someone just hit a hole-in-one on the first hole."

Instead of uttering 'A or B', the speakers utter one of the disjuncts.

Procedure

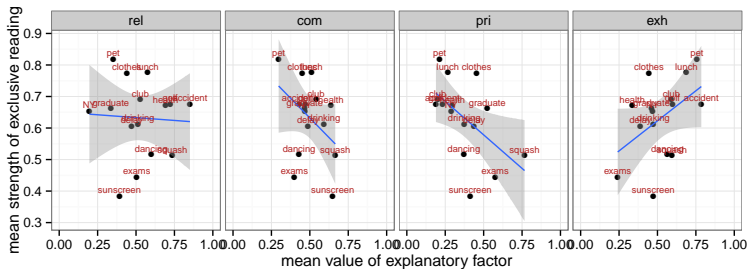
Each story was associated with one statement:

Exhaustivity

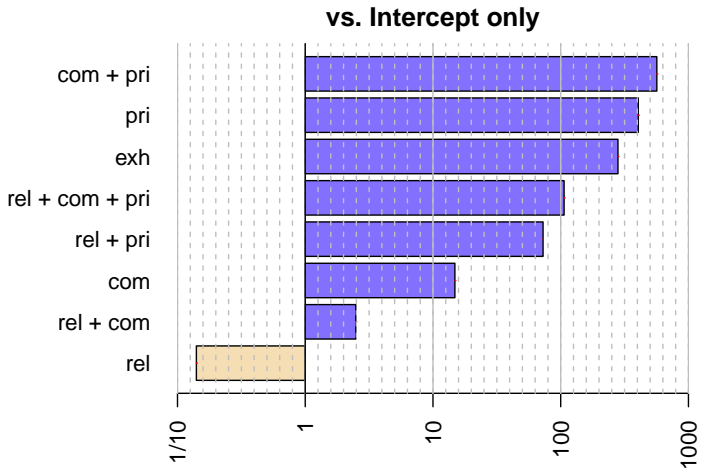
From what Hans said we may conclude that the player in question didn't make a hole-in-one on the second hole as well.

We varied which disjunct was presented in the utterance and which one in the hypothesised inference.

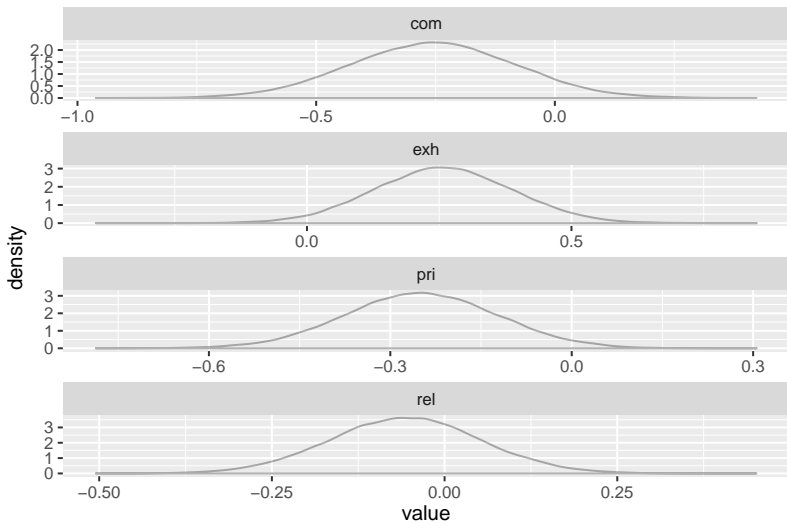
Results



Analysis



Analysis



Results

- The optimal model from Exp. 1 is substantially better than a model with just E_{xH} (Bayes' factor = 5.63).
- But the model with E_{xH} alone does quite well.
- Hence, no convincing evidence for (or against) the double exhaustification account.

Conclusion

- The strength of scalar inferences is affected by the prior probability of the inference and the competence of the speaker.
- Relevance seems to be irrelevant.
- The strength of the exclusive reading of 'or' is also affected by competence but in the opposite direction.
- Hence, exclusive readings are not scalar inferences.
- Our results are compatible with the double exhaustification, but presumably also with an ambiguity approach.

Thank you!