Implicating in semi-cooperative contexts

Jacopo Romoli

HHU, 20.4.2022

The focus

(1) Juni visited Frankfurt or Düsseldorf

The focus

(1) Juni visited Frankfurt or Düsseldorf
$\rightsquigarrow$ *Juni didn't visit both*

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(1) Juni visited Frankfurt or Düsseldorf

$\rightsquigarrow$ *Juni didn't visit both*

$\rightsquigarrow$ *The speaker doesn't know which one she visited*

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- But not in semi-cooperative contexts, where speakers assumed not to share all information they have (game shows, treasure hunts)

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- In ordinary conversations, these inferences pattern together
- But not in semi-cooperative contexts, where speakers assumed not to share all information they have (game shows, treasure hunts)
- A challenge for the standard Gricean pragmatic approach.

The project

- We report on experimental work confirming and refining the challenge

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- We put forward a response to the challenge

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- We put forward a response to the challenge
- We extend the challenge to the corresponding inferences of disjunction at the presuppositional level

Collaborators



The project

Alternatives in the foundations of implicit meanings


SALT32

Background: the debate on implicatures

Background: the debate on implicatures

The implicatures of disjunction

The main implicatures of disjunction

(2) Juni visited Frankfurt or Düsseldorf.

The main implicatures of disjunction

(2) Juni visited Frankfurt or Düsseldorf.
$\rightsquigarrow$ *she didn't visit both* EXCLUSIVITY

The main implicatures of disjunction

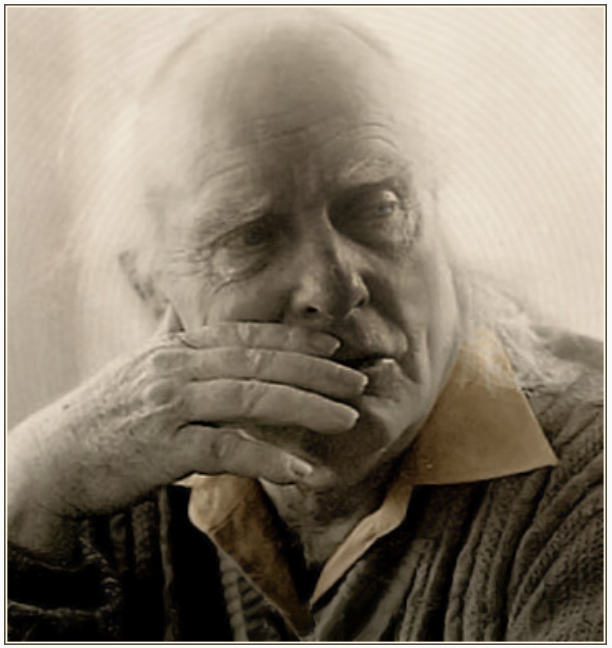
(2) Juni visited Frankfurt or Düsseldorf.

$\rightsquigarrow$ *she didn't visit both* EXCLUSIVITY

$\rightsquigarrow$ *the speaker doesn't know which* IGNORANCE

Background: the debate on implicatures

The standard pragmatic account



Implicit assumptions

- The driving force is a set of implicit assumptions we make about how we interact in conversations

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- The driving force is a set of implicit assumptions we make about how we interact in conversations
- Implicatures are inferences we draw based on these implicit assumptions.

Background: the debate on implicatures

More in detail

Assumptions of cooperativity

- In the standard approach implicatures arise from the assumption that the speaker is cooperative and will share all the relevant information she has

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- In the standard approach implicatures arise from the assumption that the speaker is cooperative and will share all the relevant information she has
- Additional assumption about how competent the speaker is with respect to alternative things she didn't say

Maxim of quantity[1]

If ϕ and ψ are both relevant to the conversation,

[1] Fox 2007

Maxim of quantity[1]

If ϕ and ψ are both relevant to the conversation, ψ is more informative than ϕ, and ψ is among the Alternatives to ϕ,

[1] Fox 2007

Maxim of quantity[1]

If ϕ and ψ are both relevant to the conversation, ψ is more informative than ϕ, and ψ is among the Alternatives to ϕ, then if the speaker believes both are true,

[1] Fox 2007

Maxim of quantity[1]

If ϕ and ψ are both relevant to the conversation, ψ is more informative than ϕ, and ψ is among the Alternatives to ϕ, then if the speaker believes both are true, the speaker should prefer ψ to ϕ.

[1] Fox 2007

Primary implicatures[2]

The fact that a speaker uttered a weaker statement (ϕ),

[2] Sauerland 2004, Soames 1989, Horn 1989

Primary implicatures[2]

The fact that a speaker uttered a weaker statement (ϕ), when she could have produced a stronger alternative (ψ),

[2] Sauerland 2004, Soames 1989, Horn 1989

Primary implicatures[2]

The fact that a speaker uttered a weaker statement (ϕ), when she could have produced a stronger alternative (ψ), means that it's not true that this speaker believes that the stronger statement holds ($\neg \mathsf{B}(\psi)$)

[2] Sauerland 2004, Soames 1989, Horn 1989

Opinionatedness or competence[3]

The speaker has an opinion about ψ:

[3] Sauerland 2004, Spector 2003, van Rooij & Schulz 2004, Gamut 1991

Opinionatedness or competence[3]

The speaker has an opinion about ψ:
she believes that ψ is true or believes that ψ is not true

[3] Sauerland 2004, Spector 2003, van Rooij & Schulz 2004, Gamut 1991

Opinionatedness or competence[3]

The speaker has an opinion about ψ:
she believes that ψ is true or believes that ψ is not true

(3) $\quad \mathsf{B}(\psi) \vee \mathsf{B}(\neg\psi)$

[3] Sauerland 2004, Spector 2003, van Rooij & Schulz 2004, Gamut 1991

Secondary implicatures

Combining primary implicatures with opinionatedness leads to secondary implicatures

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(4) $\neg \mathsf{B}(\psi)$ PRIMARY IMPLICATURE

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(4) $\neg \mathsf{B}(\psi)$ PRIMARY IMPLICATURE

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Secondary implicatures

Combining primary implicatures with opinionatedness leads to secondary implicatures

(4) $\neg \mathsf{B}(\psi)$ PRIMARY IMPLICATURE

(5) $\mathsf{B}(\psi) \vee \mathsf{B}(\neg\psi)$ OPINIONATEDENESS

(6) $\mathsf{B}(\neg\psi)$ SECONDARY IMPLICATURE

Back to disjunction

(7) Juni visited Frankfurt or Düsseldorf.

Back to disjunction

(7) Juni visited Frankfurt or Düsseldorf.

(8) $\rightsquigarrow$ *she didn't visit both*

Back to disjunction

(7) Juni visited Frankfurt or Düsseldorf.

(8) $\rightsquigarrow$ *she didn't visit both*

(9) $\rightsquigarrow$ *The speaker doesn't know which of the two she visited*

Primary implicatures for disjunction

(10) $p \vee q$ ASSERTION

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(10) $p \vee q$ ASSERTION

(11) $p, q, (p \wedge q)$ ALTERNATIVES

Primary implicatures for disjunction

(10) $p \vee q$ ASSERTION

(11) $p, q, (p \wedge q)$ ALTERNATIVES

(12) $\neg \mathrm{B}(p), \neg \mathrm{B}(q), \neg \mathrm{B}(p \wedge q)$ PRIMARY IMPLICATURES

Ignorance implicatures

- Assertion and the primary implicatures lead to ignorance

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(13) $\mathrm{B}(p \vee q) \wedge \neg\mathrm{B}(p) \wedge \neg\mathrm{B}(q)$

Ignorance implicatures

- Assertion and the primary implicatures lead to ignorance

(13) $\mathrm{B}(p \vee q) \wedge \neg\mathrm{B}(p) \wedge \neg\mathrm{B}(q)$

(14) $\Rightarrow \neg\mathrm{B}(q) \wedge \neg\mathrm{B}(p) \wedge \neg\mathrm{B}(\neg p) \wedge \neg\mathrm{B}(\neg q)$

Ignorance implicatures

- Assertion and the primary implicatures lead to ignorance

(13) $\mathrm{B}(p \vee q) \wedge \neg\mathrm{B}(p) \wedge \neg\mathrm{B}(q)$

(14) $\Rightarrow \neg\mathrm{B}(q) \wedge \neg\mathrm{B}(p) \wedge \neg\mathrm{B}(\neg p) \wedge \neg\mathrm{B}(\neg q)$

(15) *The speaker doesn't know which city she visited*

Exclusivity given opinionatedness

(16) $\neg \mathsf{B}(p \wedge q)$ PRIMARY IMPLICATURE

Exclusivity given opinionatedness

(16) $\neg \mathsf{B}(p \wedge q)$ PRIMARY IMPLICATURE

(17) $\mathsf{B}(p \wedge q) \vee \mathsf{B}(\neg(p \wedge q))$ OPINIONATEDNESS

Exclusivity given opinionatedness

(16) $\neg \mathsf{B}(p \wedge q)$ PRIMARY IMPLICATURE

(17) $\mathsf{B}(p \wedge q) \vee \mathsf{B}(\neg(p \wedge q))$ OPINIONATEDNESS

(18) $\mathsf{B}(\neg(p \wedge q))$ SECONDARY EXCLUSIVITY IMPLICATURE

Exclusivity given opinionatedness

(16) $\neg \mathsf{B}(p \wedge q)$ PRIMARY IMPLICATURE

(17) $\mathsf{B}(p \wedge q) \vee \mathsf{B}(\neg(p \wedge q))$ OPINIONATEDNESS

(18) $\mathsf{B}(\neg(p \wedge q))$ SECONDARY EXCLUSIVITY IMPLICATURE

(19) *(The speaker believes that) she didn't visit both*

Summary

- Disjunctive sentences give rise to IGNORANCE and EXCLUSIVITY

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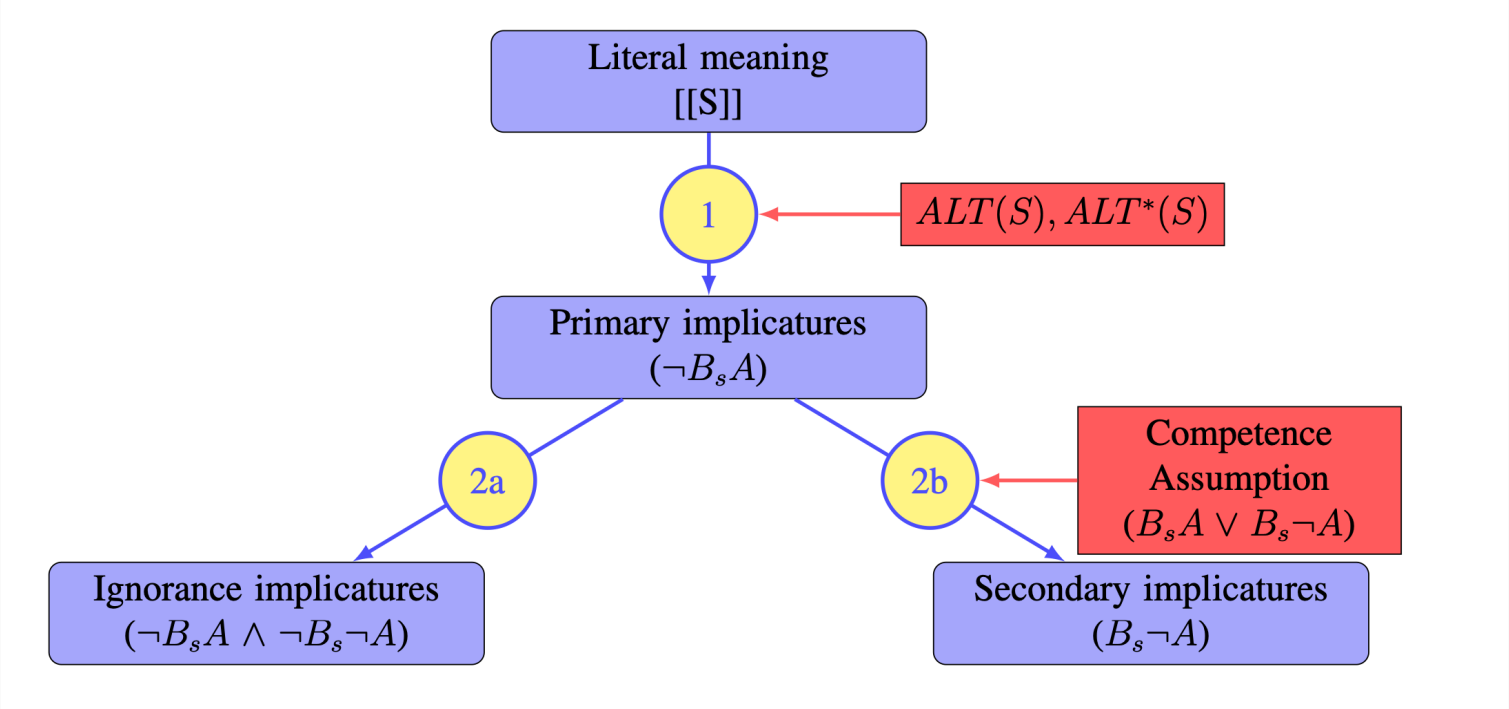
- Disjunctive sentences give rise to IGNORANCE and EXCLUSIVITY
- Accounted for on the standard pragmatic approach

Architecture[4]



[4] from Chemla and Singh 2015

Background: the debate on implicatures

The alternative grammatical account

- Implicatures are the output of a grammatical operation

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- Entailments of the sentence when parsed with a silent operator

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(20) Some of the students passed the exam

- Implicatures are the output of a grammatical operation
- Entailments of the sentence when parsed with a silent operator

(20) Some of the students passed the exam

(21) O[Some of the students passed the exam]

- This operator has the effect that ‘only’ would have

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  (22) Only some of the students passed the exam

- This operator has the effect that ‘only’ would have

  (22) Only some of the students passed the exam
  $\rightsquigarrow$ *not all of the students passed*

Implicature generating mechanism

- O negates all stronger alternatives than its prejacents

Implicature generating mechanism

- O negates all stronger alternatives than its prejacents
- Unless it leads to contradiction and without making arbitrary choices

Simple disjunctions

(23) Juni visited Düsseldorf or Frankfurt

Simple disjunctions

(23) Juni visited Düsseldorf or Frankfurt

(24)

Juni visited Düsseldorf or Frankfurt	$(A \vee B)$
Juni visited Düsseldorf	A
Juni visited Frankfurt	B
Juni visited Düsseldorf and Frankfurt	$(A \wedge B)$

Simple disjunctions

(25)

Juni visited Düsseldorf or Frankfurt	$(A \vee B)$
Juni visited Düsseldorf	A
Juni visited Frankfurt	B
Juni visited Düsseldorf and Frankfurt	$(A \wedge B)$

Simple disjunctions

(26) O[Juni visited Düsseldorf or Frankfurt] =
Juni visited Düsseldorf or Frankfurt
and she didn't visit both of them

Simple disjunctions

(26) O[Juni visited Düsseldorf or Frankfurt] =
Juni visited Düsseldorf or Frankfurt
and she didn't visit both of them

(27) $(A \vee B) \wedge \neg(A \wedge B)$

Exclusivity and Ignorance

- Exclusivity implicatures derived as entailments

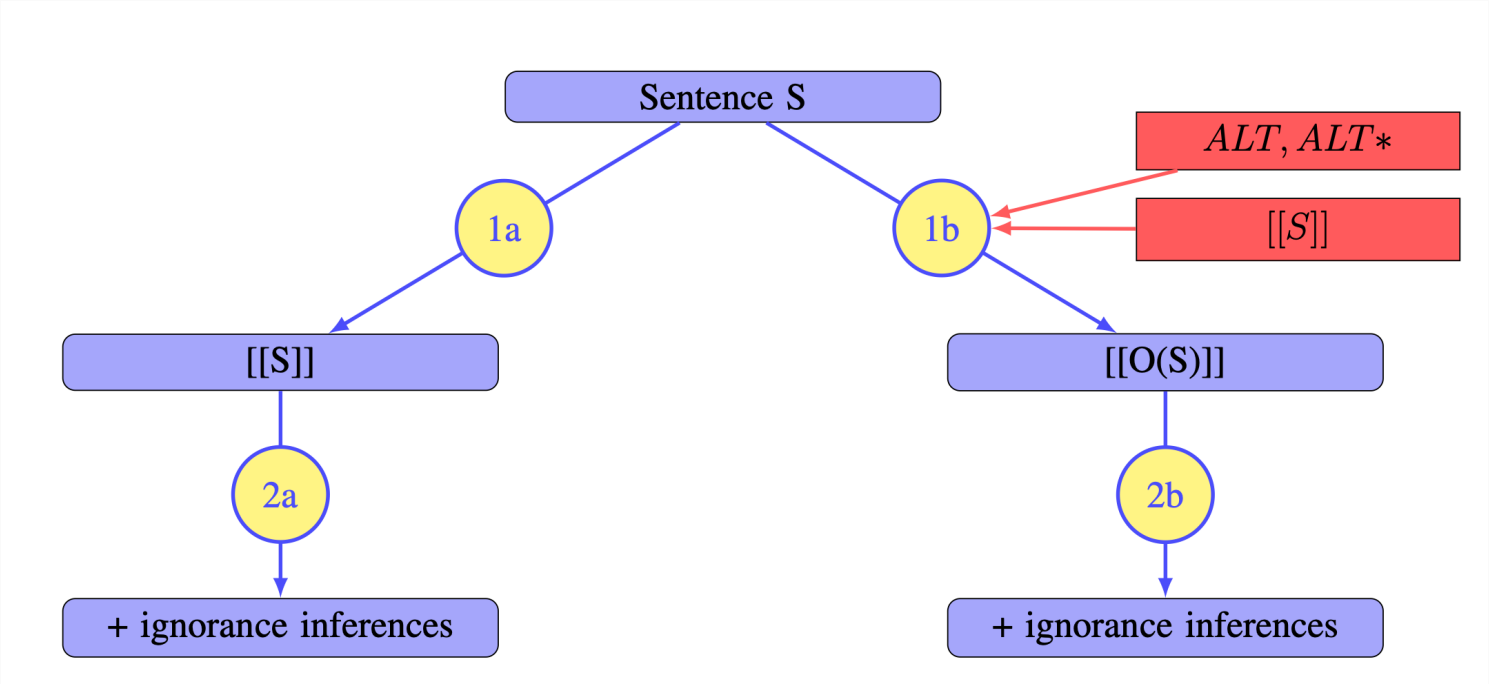
[5] Though see Meyer 2013, Buccola and Haida 2018, Marty and Romoli 2021

Exclusivity and Ignorance

- Exclusivity implicatures derived as entailments
- Ignorance inferences are still the output of pragmatic reasoning[5]

[5] Though see Meyer 2013, Buccola and Haida 2018, Marty and Romoli 2021

Architecture[6]



[6] Chemla and Singh 2015

Background: the debate on implicatures

Points of contention

Embedded implicatures[7]

(28) Every student took some of the courses

[7] Chierchia 2004, Chierchia et al 2012, Chemla and Spector 2011

Embedded implicatures[7]

(28) Every student took some of the courses
$\rightsquigarrow$ *No student took all of the courses*

[7] Chierchia 2004, Chierchia et al 2012, Chemla and Spector 2011

Embedded implicatures[7]

(28) Every student took some of the courses
$\rightsquigarrow$ *No student took all of the courses*

(29) Every student$_i$ O[t$_i$ took some of the courses]

[7] Chierchia 2004, Chierchia et al 2012, Chemla and Spector 2011

Hurford sentences[8]

(30) #John lives in Paris or France

[8] Gazdar 1979, Chierchia et al 2012

Hurford sentences[8]

(30) #John lives in Paris or France

(31) John took some of the courses or he took all of them

[8] Gazdar 1979, Chierchia et al 2012

Hurford sentences[8]

(30) #John lives in Paris or France

(31) John took some of the courses or he took all of them

(32) O[John took some of the courses] or he took all of them

[8] Gazdar 1979, Chierchia et al 2012

Free choice[9]

(33) Jane is allowed to take syntax or semantics

[9] Fox 2007, Bar-Lev and Fox 2021

Free choice[9]

(33) Jane is allowed to take syntax or semantics
$\rightsquigarrow$ *Jane is allowed to take one and allowed to take the other*

[9] Fox 2007, Bar-Lev and Fox 2021

Experimental evidence

Remarks on the experimental turn in the study of scalar implicature Part I and Part II

Emmanuel Chemla and Raj Singh

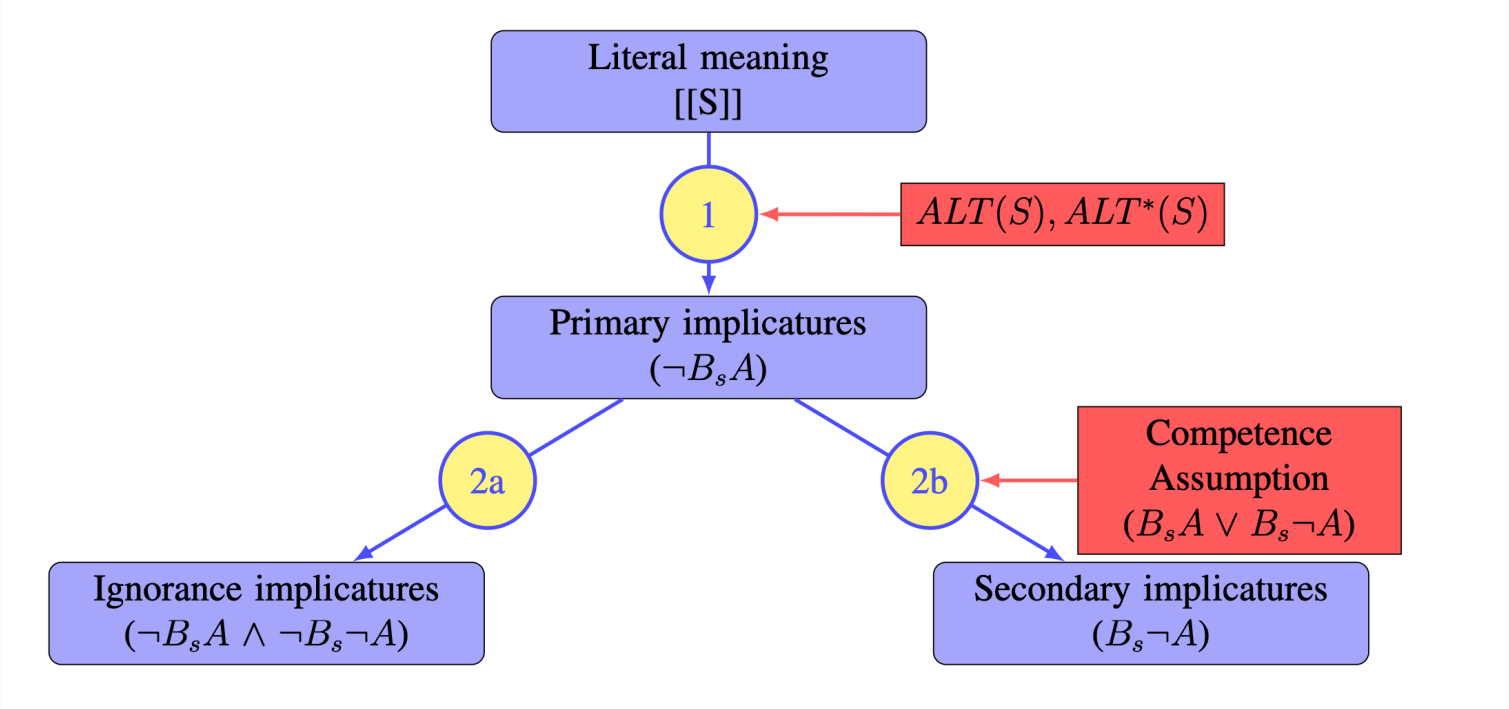
This document includes the pre-final version of a review study that was published in *Language and Linguistics Compass* in two parts:

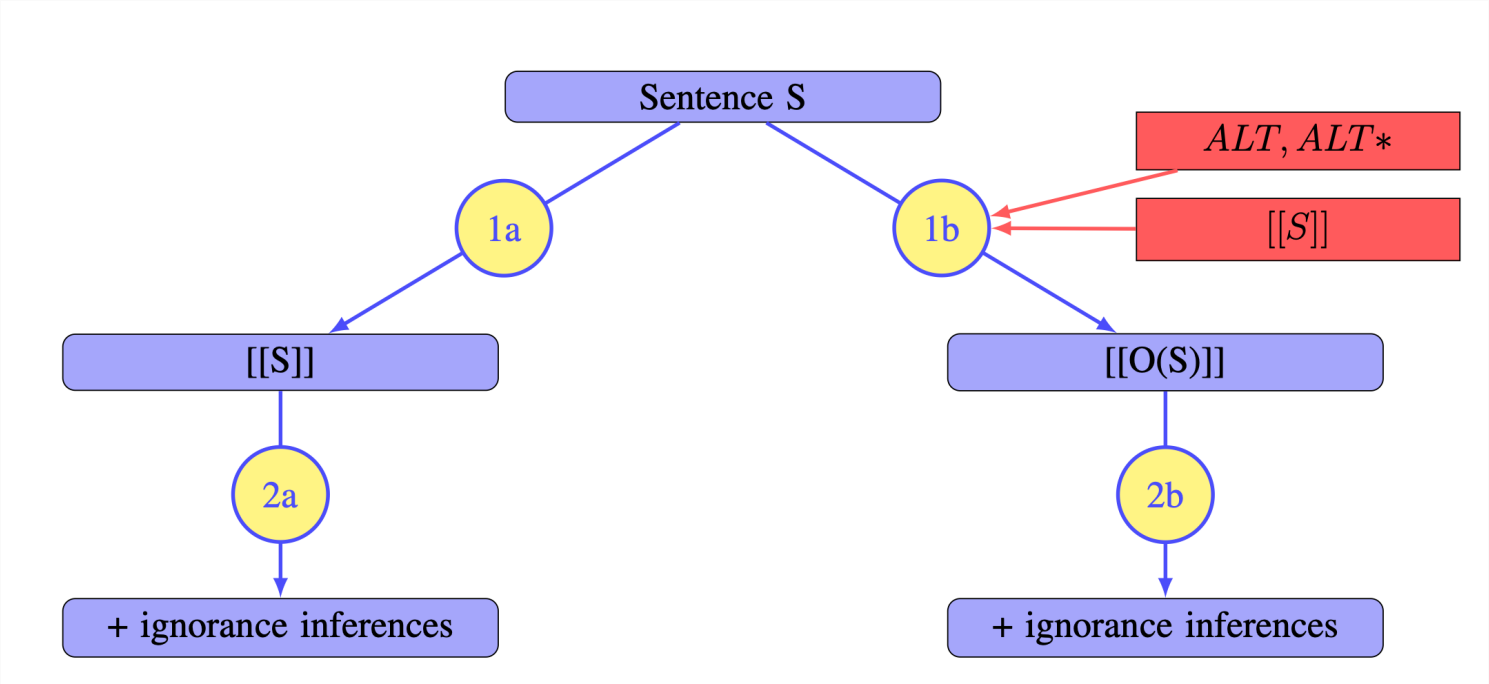
– Chemla, E. & Singh, R. (2014). Remarks on the experimental turn in the study of scalar implicature, Part I. *Language and Linguistics Compass.*

– Chemla, E. & Singh, R. (2014). Remarks on the experimental turn in the study of scalar implicature, Part II. *Language and Linguistics Compass.*

Background: the debate on implicatures

Different architectures


Literal meaning
[[S]]
1
$ALT(S), ALT^*(S)$
Primary implicatures
$(\neg B_s A)$
2a
2b
Competence
Assumption
$(B_s A \vee B_s \neg A)$
Ignorance implicatures
$(\neg B_s A \wedge \neg B_s \neg A)$
Secondary implicatures
$(B_s \neg A)$


Sentence S
1a
1b
$ALT, ALT*$
$[[S]]$
[[S]]
[[O(S)]]
2a
2b
+ ignorance inferences
+ ignorance inferences

The challenge from semi-cooperative contexts

Ignorance in ordinary contexts

- It is common knowledge that the speaker knows where he was born

Ignorance in ordinary contexts

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(34) #I was born in Rome or Milan

Ignorance in ordinary contexts

- It is common knowledge that the speaker knows where he was born

(34) #I was born in Rome or Milan

$\rightsquigarrow$ *The speaker doesn't know in which of the two*

Semi-cooperative contexts[10]

- Imagine a treasure hunt scenario

[10] Grice 1967

Semi-cooperative contexts[10]

- Imagine a treasure hunt scenario
- It is common knowledge that the speaker knows the location of the prize

[10] Grice 1967

Semi-cooperative contexts[10]

- Imagine a treasure hunt scenario
- It is common knowledge that the speaker knows the location of the prize

(35) The prize is in the attic or the basement

[10] Grice 1967

Semi-cooperative contexts[10]

- Imagine a treasure hunt scenario
- It is common knowledge that the speaker knows the location of the prize

(35) The prize is in the attic or the basement
$\not\rightsquigarrow$ *The speaker doesn't know in which of the two*

[10] Grice 1967

Semi-cooperative contexts

- So what is happening in those treasure hunt scenarios?

[11] See Meyer 2013 for an alternative response

Semi-cooperative contexts

- So what is happening in those treasure hunt scenarios?
- The speaker is not assumed to share all the relevant information they have

[11] See Meyer 2013 for an alternative response

Semi-cooperative contexts

- So what is happening in those treasure hunt scenarios?
- The speaker is not assumed to share all the relevant information they have
- Maxim of Quantity is 'not active' in those contexts[11]

[11] See Meyer 2013 for an alternative response

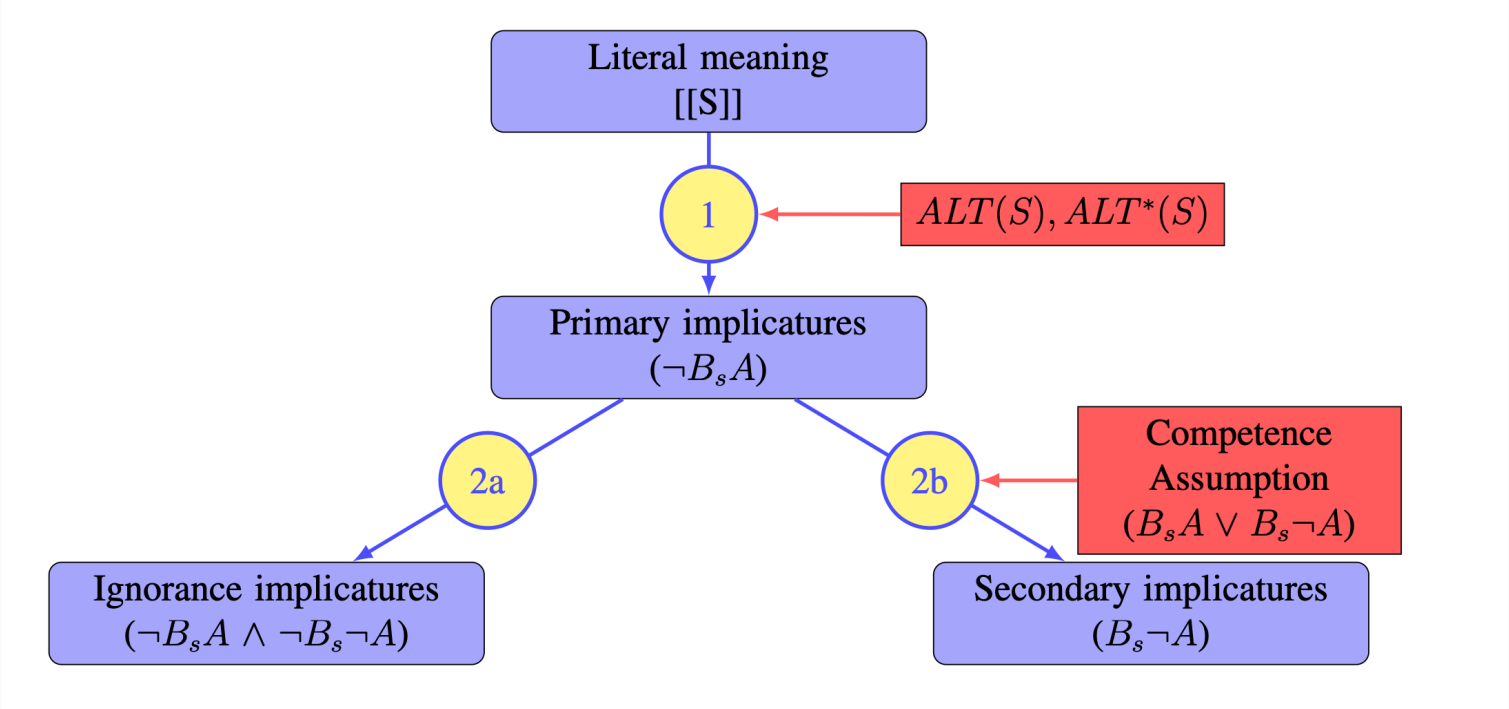
Semi-cooperative contexts

(36) #I was born in Rome or Milan

Semi-cooperative contexts

(36) #I was born in Rome or Milan

(37) The prize is in the attic or the basement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Secondary implicatures
$(B_s \neg A)$

Prediction

- Both exclusivity and ignorance are derived via MQ

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- If MQ is de-activated we should expect no exclusivity either

Prediction

- Both exclusivity and ignorance are derived via MQ
- If MQ is de-activated we should expect no exclusivity either
- **Prediction**: Ignorance and exclusivity inferences should both not arise if MQ is not active in the context

Testing the prediction

- We cannot tell from Grice's example

  (38) The prize is in the attic or the basement

Testing the prediction

- We cannot tell from Grice's example

  (38) The prize is in the attic or the basement

- Exclusivity follows for the context anyway

Semantics & Pragmatics Volume 7, Article 5: 1–20, 2014
http://dx.doi.org/10.3765/sp.7.5

Cancelling the Maxim of Quantity: Another challenge for a Gricean theory of Scalar Implicatures*

Danny Fox
HUJI and MIT

Submitted 2012-12-24 / First decision 2013-02-24 / Revision received 2013-04-23 / Second decision 2013-05-18 / Revision received 2013-06-18 / Third decision 2013-07-18 / Revision received 2013-08-24 / Accepted 2013-09-02 / Final version received 2013-10-09 / Published 2014-04-28

Abstract Grice (1975) pointed out that the ignorance inferences normally drawn when disjunctive sentences are uttered are cancelled when it is presupposed that speakers are not going to provide all of the relevant information that they have available (e.g., in the context of a treasure hunt). This argues that ignorance inferences depend on the maxim of quantity for their derivation. Here it is argued that the situation with Scalar Implicatures is different. This is expected by the grammatical theory of Scalar Implicatures, but not by standard Gricean or neo-Gricean alternatives.

Game show scenario

Game show scenario[12]

There are 100 boxes and five of them contain a million dollars each (the rest of the boxes are empty).

[12] Fox 2014

Game show scenario[12]

There are 100 boxes and five of them contain a million dollars each (the rest of the boxes are empty). The show's host knows the identity of the five boxes, but will, of course, not disclose this information.

[12] Fox 2014

Game show scenario[12]

There are 100 boxes and five of them contain a million dollars each (the rest of the boxes are empty). The show's host knows the identity of the five boxes, but will, of course, not disclose this information. At various points, hints are provided by the host, with the common understanding that these reveal only part of the relevant information available to the host.

[12] Fox 2014

Game show scenario[12]

There are 100 boxes and five of them contain a million dollars each (the rest of the boxes are empty). The show's host knows the identity of the five boxes, but will, of course, not disclose this information. At various points, hints are provided by the host, with the common understanding that these reveal only part of the relevant information available to the host.

(39) There is money in box 20 or box 25.

[12] Fox 2014

Game show scenario[12]

There are 100 boxes and five of them contain a million dollars each (the rest of the boxes are empty). The show's host knows the identity of the five boxes, but will, of course, not disclose this information. At various points, hints are provided by the host, with the common understanding that these reveal only part of the relevant information available to the host.

(39) There is money in box 20 or box 25.
$\rightsquigarrow$ *there isn't money in both*

[12] Fox 2014

Game show scenario

(40) There is money in box 20 or box 25. $\rightsquigarrow$ *there isn't money in both*

Game show scenario

(40) There is money in box 20 or box 25. $\rightsquigarrow$ *there isn't money in both*

Imagine that each box turned out to contain a million dollars.

Game show scenario

(40) There is money in box 20 or box 25. $\rightsquigarrow$ *there isn't money in both*

Imagine that each box turned out to contain a million dollars.

(41) What you said was wrong!
You said there was money in box 20 OR box 25. But there was money in both boxes.

Game show scenario - Compare

(42) There is money in box 20 or box 25 or both.

Game show scenario - Compare

(42) There is money in box 20 or box 25 or both.
$\not\rightsquigarrow$ *there isn't money in both*

Game show scenario - Compare

(42) There is money in box 20 or box 25 or both.
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(43) #What you said was wrong!
You said there was money in box 20 OR box 25 or both. But there was money in both boxes.

In sum

- Ignorance doesn't arise in semi-cooperative contexts

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- A natural account: MQ is not active in those contexts

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- Ignorance doesn't arise in semi-cooperative contexts
- A natural account: MQ is not active in those contexts
- Exclusivity should also not arise

In sum

- Exclusivity would still arise in game show contexts

In sum

- Exclusivity would still arise in game show contexts
- Challenging the standard pragmatic approach

The challenge from semi-cooperative contexts

Previous study

Testing the intuition[13]

Your task is to choose a numbered box.

[13] Agyemang 2020

Testing the intuition[13]

Your task is to choose a numbered box. There are 100 numbered boxes in total, and 5 of them are associated with money.

[13] Agyemang 2020

Testing the intuition[13]

Your task is to choose a numbered box. There are 100 numbered boxes in total, and 5 of them are associated with money. The host tells the first contestant that there is money in box 20 or box 25/in box 20 or 25 or both.

[13] Agyemang 2020

Testing the intuition[13]

Your task is to choose a numbered box. There are 100 numbered boxes in total, and 5 of them are associated with money. The host tells the first contestant that there is money in box 20 or box 25/in box 20 or 25 or both. The first contestant picks box 20 finds a million dollars there/discovers that the box is empty.

[13] Agyemang 2020

Testing the intuition[13]

Your task is to choose a numbered box. There are 100 numbered boxes in total, and 5 of them are associated with money. The host tells the first contestant that there is money in box 20 or box 25/in box 20 or 25 or both. The first contestant picks box 20 finds a million dollars there/discovers that the box is empty.

Imagine you are the next contestant in this game. The host does not give you any more information. Which action are you most likely to take?

[13] Agyemang 2020

Testing the intuition[14]

- Two within-subject factors:

[14] Agyemang 2020

Testing the intuition[14]

- Two within-subject factors:
  - Inference availability: yes or no (*or both*)

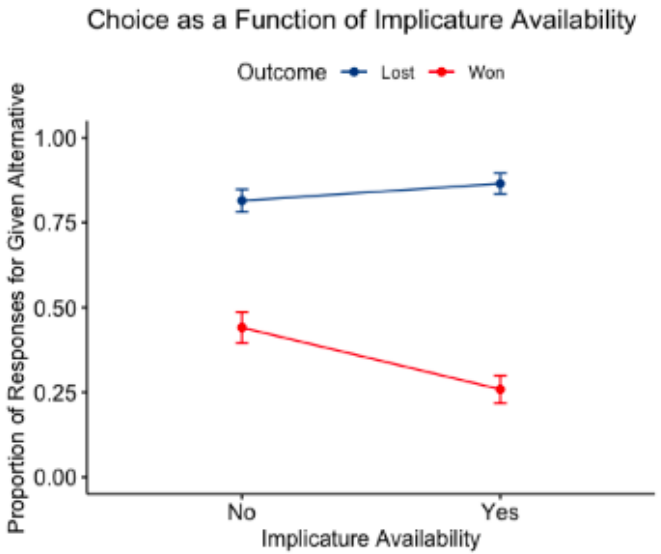
[14] Agyemang 2020

Testing the intuition[14]

- Two within-subject factors:
  - Inference availability: yes or no (*or both*)
  - previous outcome: won or lost

[14] Agyemang 2020

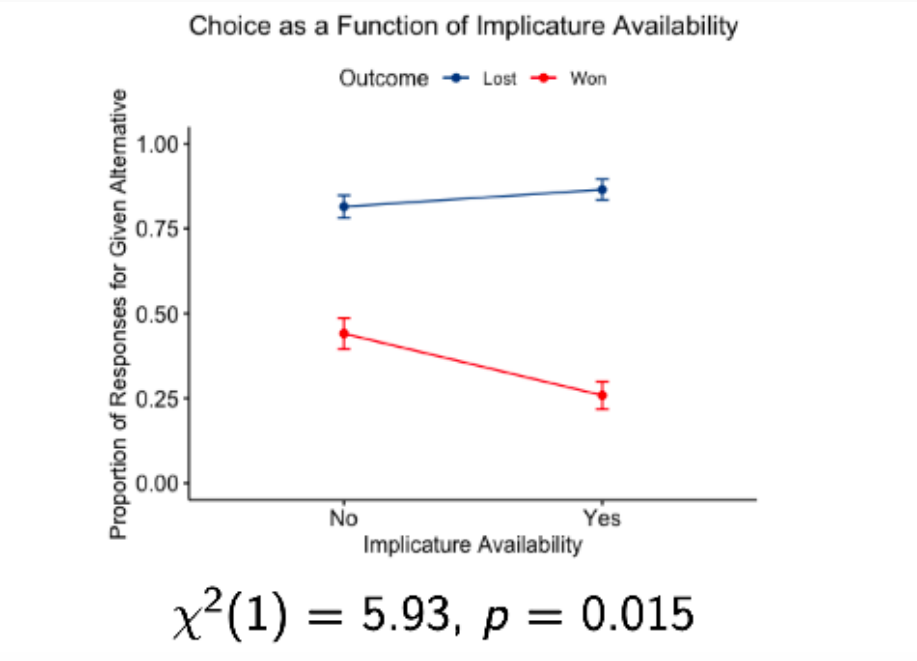
Testing the intuition[15]



$$\chi^2(1) = 5.93,\ p = 0.015$$

[15] Agyemang 2020

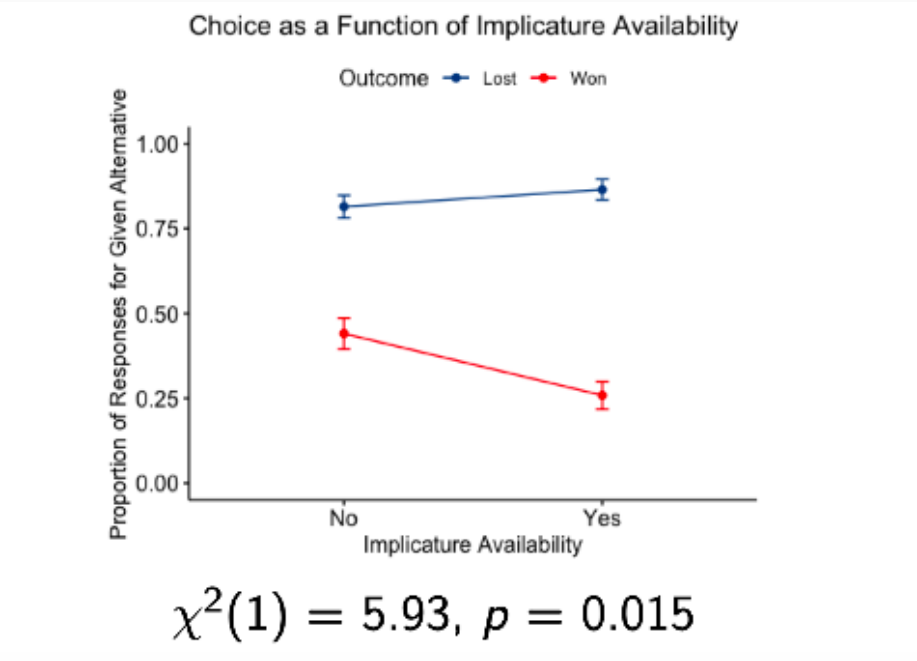
Testing the intuition[15]



- When Box 20 lost, people systematically picked out box 25.

[15] Agyemang 2020

Testing the intuition[15]



- When Box 20 lost, people systematically picked out box 25.
- When Box 20 won, people picked out box 25 way less when exclusivity could be derived than when it could not

[15] Agyemang 2020

In sum

- Experimental evidence confirming the intuition and the challenge

Potential confound

- Could exclusivity arise as a by product of reasoning over game scenarios?

Potential confound

- Could exclusivity arise as a by product of reasoning over game scenarios?
    - Game shows don't just give money away normally

Potential confound

- Could exclusivity arise as a by product of reasoning over game scenarios?
  - Game shows don't just give money away normally
  - Only one prize in the two mentioned boxes

Experiment 1

Experiment 1

Adding a slime context

Celebrity slime

Replicating the money context

Your task is to choose a numbered box. There are 100 numbered boxes in total, and 5 of them are associated with money. The host tells the first contestant that there is money in box 20 or box 25/in box 20 or 25 or both. The first contestant picks box 20 finds a million dollars there/discovers that the box is empty.

Imagine you are the next contestant in this game. The host does not give you any more information. Which action are you most likely to take?

Adding a slime context

Your task is to choose a numbered box.

Adding a slime context

Your task is to choose a numbered box. There are 100 numbered boxes in total, and 5 of them are associated with slime.

Adding a slime context

Your task is to choose a numbered box. There are 100 numbered boxes in total, and 5 of them are associated with slime. The host warns the first celebrity that slime is associated with box 20 or box 25/box 20 or 25 or both.

Adding a slime context

Your task is to choose a numbered box. There are 100 numbered boxes in total, and 5 of them are associated with slime. The host warns the first celebrity that slime is associated with box 20 or box 25/box 20 or 25 or both. The celebrity picks box 20 nothing happens/is slimed.

Adding a slime context

Your task is to choose a numbered box. There are 100 numbered boxes in total, and 5 of them are associated with slime. The host warns the first celebrity that slime is associated with box 20 or box 25/box 20 or 25 or both. The celebrity picks box 20 nothing happens/is slimed.

Imagine you are the next contestant in this game. The host does not give you any more information. Which action are you most likely to take?

Design

- Game type (between groups)

Design

- Game type (between groups)
- Two factors:

Design

- Game type (between groups)
- Two factors:
    - Inference availability: yes or not (*or both*)

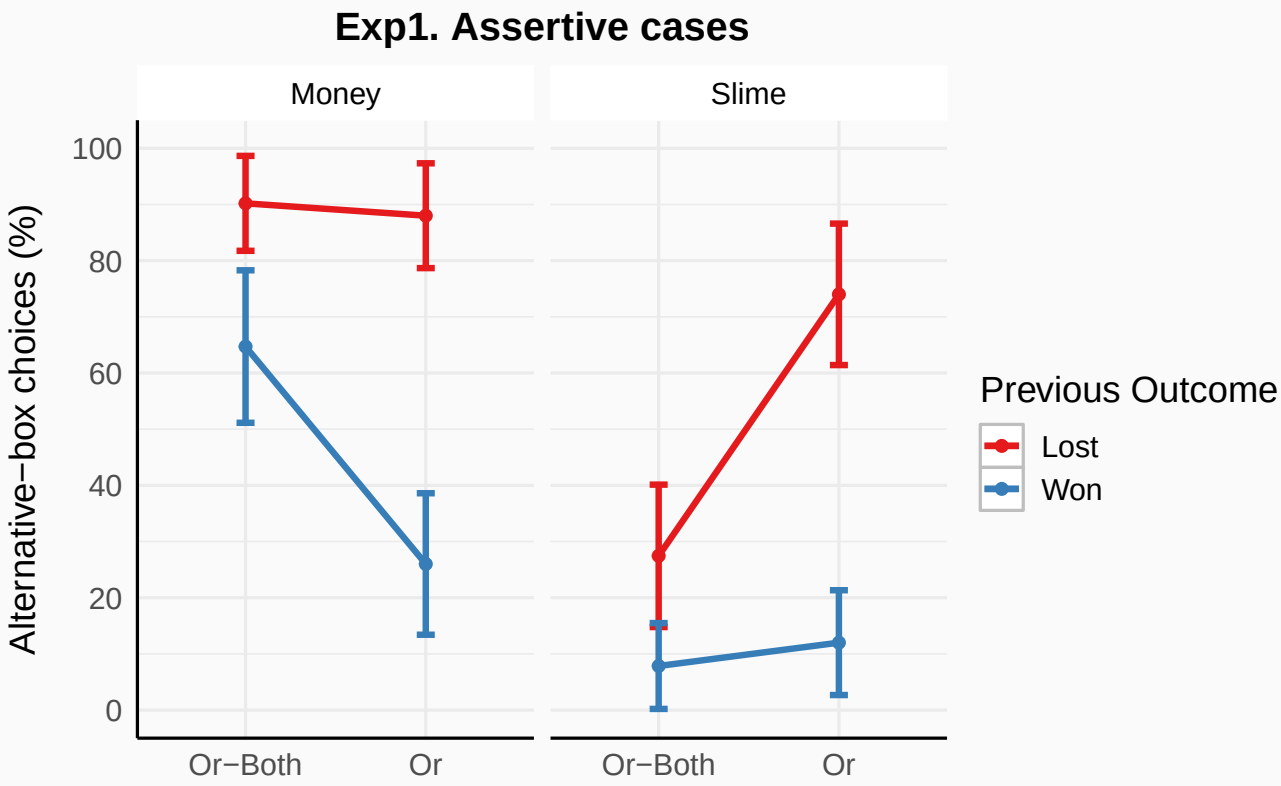
Design

- Game type (between groups)
- Two factors:
  - Inference availability: yes or not (*or both*)
  - previous outcome: won or lost

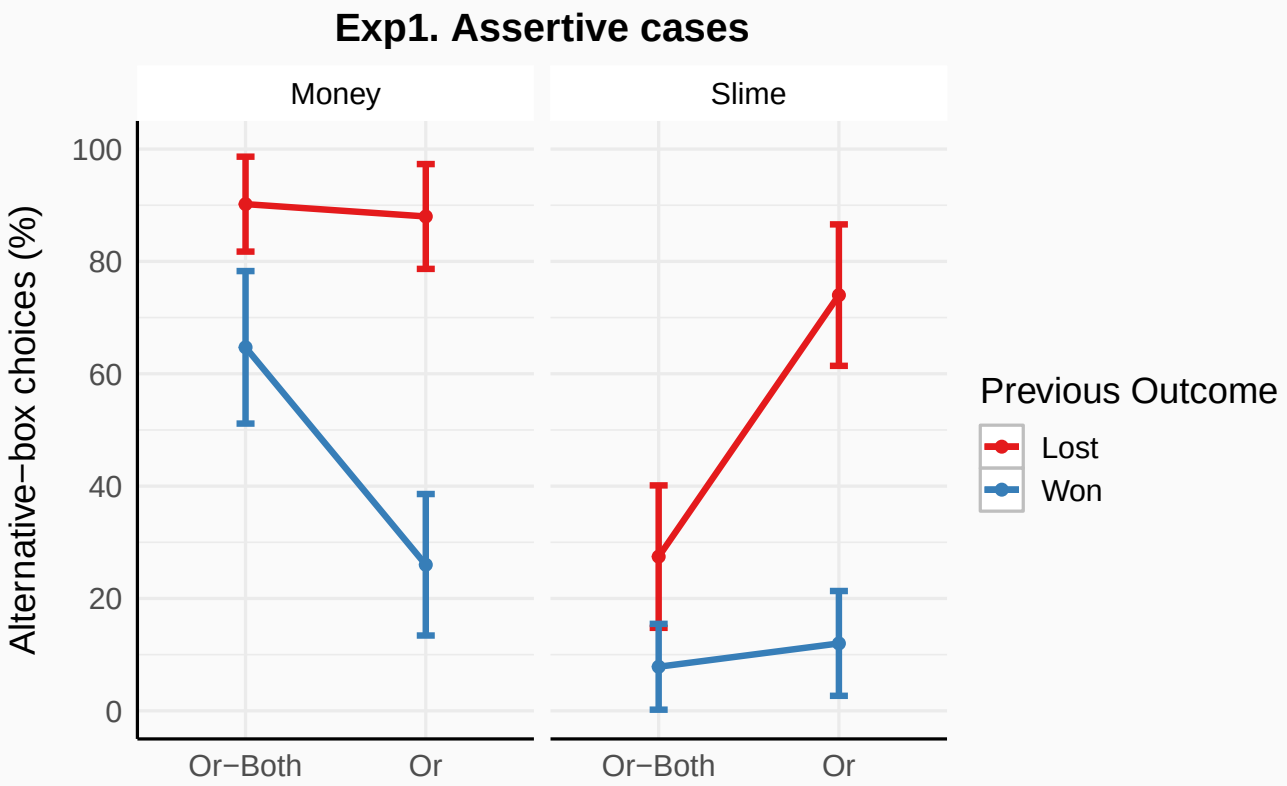
Participants

- 200 participants recruited through Prolific (100 per game type)

Results

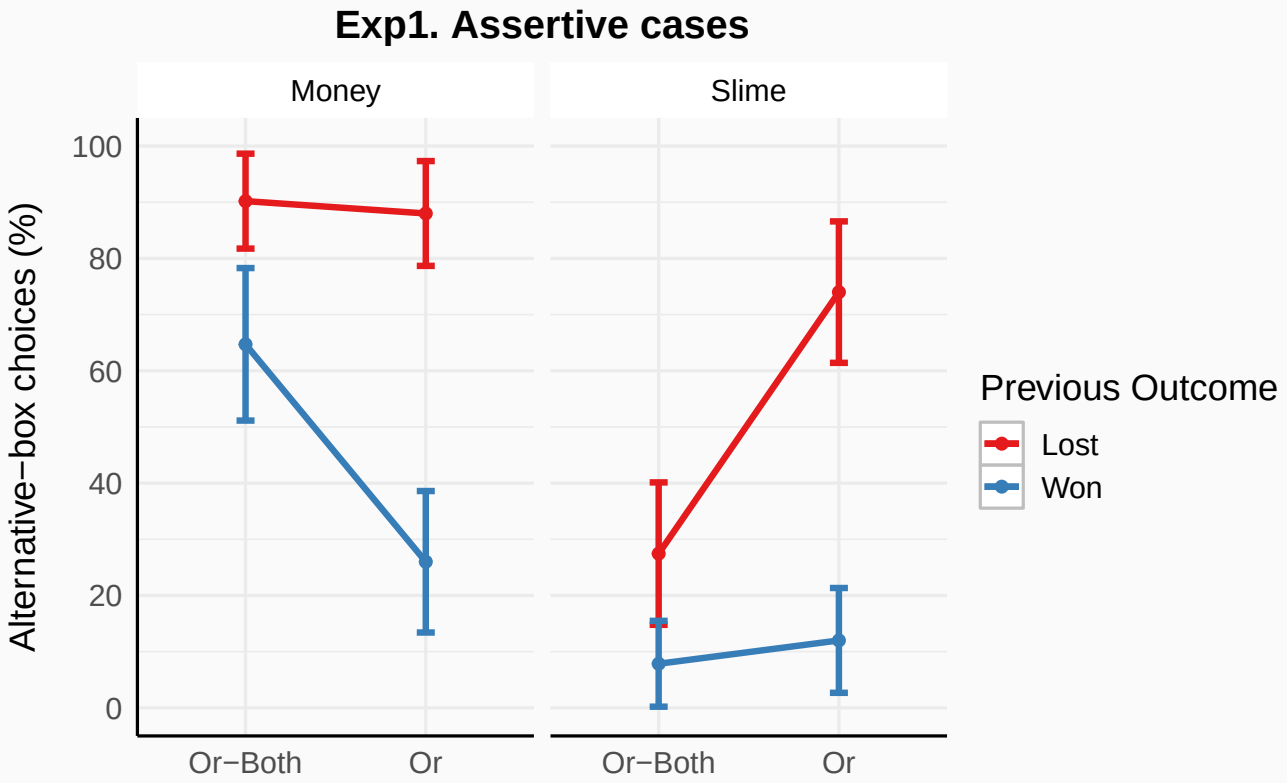

Exp1. Assertive cases
Money
Slime
Alternative−box choices (%)
100
80
60
40
20
0
Or−Both
Or
Or−Both
Or
Previous Outcome
Lost
Won

Results



- Replicated Agyemang's result with the game show

Results



- Replicated Agyemang's result with the game show
- Same effect in the Slime condition

Discussion

- Confirm and refine the challenge from semi-cooperative contexts

Discussion

- Confirm and refine the challenge from semi-cooperative contexts
- Removing potential confound having to do with the nature of game shows

General discussion

General discussion

Back to the challenge

Why challenging

- The standard pragmatic account predicts that ignorance and exclusivity should go together

Why challenging

- The standard pragmatic account predicts that ignorance and exclusivity should go together
- We confirmed and refined the challenge of semi-cooperative contexts where you can have the latter but not the former

What now?

- Supporting the alternative grammatical approach[16]

[16] Fox 2007, 2014

What now?

- Supporting the alternative grammatical approach[16]
- Push to modify the pragmatic approach so as to account for the challenge

[16] Fox 2007, 2014

General discussion

A response

A response

- The challenge was based on the assumption that MQ is de-activated in semi-cooperative contexts

[17] For discussion about refining the maxims see a.o. Carston 1998, Green 1995

A response

- The challenge was based on the assumption that MQ is de-activated in semi-cooperative contexts
- Can we reformulate MQ so that it can remain active and lead to exclusivity (but still not predict ignorance)?[17]

[17] For discussion about refining the maxims see a.o. Carston 1998, Green 1995

Making the maxim more general

If ϕ and ψ are both relevant to the conversation, ϕ is more informative than ψ, and ψ is among the Alternatives to ϕ, then if a speaker believes both are true, the speaker should prefer ψ to ϕ.

Not only informativity

If ϕ and ψ are both relevant to the conversation, ϕ is more informative than ψ, and ψ is among the Alternatives to ϕ, then if a speaker is in a position to communicate both, the speaker should prefer ψ to ϕ.

Not only informativity

Being in position to communicate ϕ:

Not only informativity

Being in position to communicate ϕ:

(44) $\quad \mathsf{PtC}(\phi) = \mathsf{B}(\phi) \wedge \mathsf{W}(\phi)$

Not only informativity

Being in position to communicate ϕ:

(44) $\quad \mathrm{PtC}(\phi) = \mathrm{B}(\phi) \wedge \mathrm{W}(\phi)$

$\mathrm{W}(\phi)$: the speaker is willing to add ϕ to the common ground (if she believes it)

Back to implicatures

(45) ϕ ASSERTION

Back to implicatures

(45) ϕ ASSERTION

(46) ψ ALTERNATIVE

Back to implicatures

(45) ϕ ASSERTION

(46) ψ ALTERNATIVE

(47) $\neg \mathsf{PtC}(\psi) = \neg[\mathsf{B}(\psi) \wedge \mathsf{W}(\psi)]$ PRIMARY IMPLICATURE

Back to implicatures

(45) ϕ ASSERTION

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(47) $\neg \mathsf{PtC}(\psi) = \neg[\mathsf{B}(\psi) \wedge \mathsf{W}(\psi)]$ PRIMARY IMPLICATURE

- In ordinary conversations, $\mathsf{W}(\psi)$ is assumed

Back to implicatures

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- so from $[\neg \mathrm{B}(\psi) \vee \neg \mathrm{W}(\psi)]$ and $\mathrm{W}(\psi)$

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(46) ψ ALTERNATIVE

(47) $\neg \mathrm{PtC}(\psi) = \neg[\mathrm{B}(\psi) \wedge \mathrm{W}(\psi)]$ PRIMARY IMPLICATURE

- In ordinary conversations, $\mathrm{W}(\psi)$ is assumed
- so from $[\neg \mathrm{B}(\psi) \vee \neg \mathrm{W}(\psi)]$ and $\mathrm{W}(\psi)$
- we conclude $\neg \mathrm{B}(\psi)$

Making opinionatedness more general: informative attitude

(48) $\mathsf{PtC}(\psi) \vee \mathsf{PtC}(\neg\psi)$

Making opinionatedness more general: informative attitude

(48) $\mathsf{PtC}(\psi) \vee \mathsf{PtC}(\neg\psi)$

(49) $[\mathsf{B}(\psi) \wedge \mathsf{W}(\psi)] \vee [\mathsf{B}(\neg\psi) \wedge \mathsf{W}(\neg\psi)]$

Back to implicatures

- If we further make the informative attitude assumption

Back to implicatures

- If we further make the informative attitude assumption

(50) $[\mathsf{B}(\psi) \wedge \mathsf{W}(\psi)] \vee [\mathsf{B}(\neg\psi) \wedge \mathsf{W}(\neg\psi)]$

Back to implicatures

- If we further make the informative attitude assumption

  (50) $[\mathsf{B}(\psi) \wedge \mathsf{W}(\psi)] \vee [\mathsf{B}(\neg\psi) \wedge \mathsf{W}(\neg\psi)]$

- $\neg\mathsf{B}(\psi)$ strengthened to $\mathsf{B}(\neg\psi)$ in the usual way

Back to disjunction

(51) $p \vee q$ ASSERTION

Back to disjunction

(51) $p \vee q$ ASSERTION

(52) $p, q, (p \wedge q)$ ALTERNATIVE

Back to disjunction

(51) $p \vee q$ ASSERTION

(52) $p, q, (p \wedge q)$ ALTERNATIVE

(53) $\neg\mathsf{PtC}(p), \neg\mathsf{PtC}(q), \neg\mathsf{PtC}(p \wedge q)$ PRIMARY IMPLICATURES

Back to disjunction

(51) $p \vee q$ ASSERTION

(52) $p, q, (p \wedge q)$ ALTERNATIVE

(53) $\neg \mathrm{PtC}(p), \neg \mathrm{PtC}(q), \neg \mathrm{PtC}(p \wedge q)$ PRIMARY IMPLICATURES

- In ordinary conversations, $\mathrm{W}(p)$ and $\mathrm{W}(q)$ are assumed

Back to disjunction

(51) $p \vee q$ ASSERTION

(52) $p, q, (p \wedge q)$ ALTERNATIVE

(53) $\neg \mathrm{PtC}(p), \neg \mathrm{PtC}(q), \neg \mathrm{PtC}(p \wedge q)$ PRIMARY IMPLICATURES

- In ordinary conversations, $\mathrm{W}(p)$ and $\mathrm{W}(q)$ are assumed
- so we conclude $\neg \mathrm{B}(p)$ and $\neg \mathrm{B}(q)$

Back to disjunction

(51) $p \vee q$ ASSERTION

(52) $p, q, (p \wedge q)$ ALTERNATIVE

(53) $\neg \mathrm{PtC}(p), \neg \mathrm{PtC}(q), \neg \mathrm{PtC}(p \wedge q)$ PRIMARY IMPLICATURES

- In ordinary conversations, $\mathrm{W}(p)$ and $\mathrm{W}(q)$ are assumed
- so we conclude $\neg \mathrm{B}(p)$ and $\neg \mathrm{B}(q)$
- Ignorance follows as before

Exclusivity in ordinary contexts

(54) $\neg \mathrm{PtC}(p \wedge q)$ PRIMARY IMPLICATURE

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(54) $\neg \mathrm{PtC}(p \wedge q)$ PRIMARY IMPLICATURE

(55) $\mathrm{W}(p \wedge q)$, $\mathrm{W}\neg(p \wedge q)$ WILLINGNESS

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(54) $\neg \mathrm{PtC}(p \wedge q)$ PRIMARY IMPLICATURE

(55) $\mathrm{W}(p \wedge q)$, $\mathrm{W}\neg(p \wedge q)$ WILLINGNESS

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(57) $\mathrm{PtC}(p \wedge q) \ \vee \ \mathrm{PtC}(\neg(p \wedge q))$ INFORMATIVE ATTITUDE

Exclusivity in ordinary contexts

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(57) $\mathrm{PtC}(p \wedge q) \ \vee \ \mathrm{PtC}(\neg(p \wedge q))$ INFORMATIVE ATTITUDE

(58) $\mathrm{PtC}(\neg(p \wedge q))$

Exclusivity in ordinary contexts

(54) $\neg \mathrm{PtC}(p \wedge q)$ PRIMARY IMPLICATURE

(55) $\mathrm{W}(p \wedge q)$, $\mathrm{W}\neg(p \wedge q)$ WILLINGNESS

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(57) $\mathrm{PtC}(p \wedge q) \ \vee \ \mathrm{PtC}(\neg(p \wedge q))$ INFORMATIVE ATTITUDE

(58) $\mathrm{PtC}(\neg(p \wedge q))$

(59) $\Rightarrow \mathrm{B}(\neg(p \wedge q))$ SECONDARY EXCLUSIVITY IMPLICATURE

Game show contexts

- The host is assumed to know exactly where the money/slime is

Game show contexts

- The host is assumed to know exactly where the money/slime is
- She can give hints but not give away the exact location

Game show contexts

- The host is assumed to know exactly where the money/slime is
- She can give hints but not give away the exact location
- We cannot assume $\mathrm{W}(p)$, $\mathrm{W}(q)$, or $\mathrm{W}(p \wedge q)$

Game show contexts - No ignorance

- In semicooperative conversations, W(p) and W(q) are **not** assumed

Game show contexts - No ignorance

- In semicooperative conversations, $\mathrm{W}(p)$ and $\mathrm{W}(q)$ are **not** assumed
- Rather, $\neg\mathrm{W}(p)$ and $\neg\mathrm{W}(q)$ are assumed

Game show contexts - No ignorance

- In semicooperative conversations, W(p) and W(q) are **not** assumed
- Rather, ¬W(p) and ¬W(q) are assumed

(60) ¬PtC(p) and ¬PtC(q) PRIMARY IMPLICATURES

Game show contexts - No ignorance

- In semicooperative conversations, W(p) and W(q) are **not** assumed
- Rather, ¬W(p) and ¬W(q) are assumed

(60) ¬PtC(p) and ¬PtC(q) PRIMARY IMPLICATURES

- we cannot conclude ¬B(p) and ¬B(q)

Game show contexts - No ignorance

- In semicooperative conversations, W(p) and W(q) are **not** assumed
- Rather, ¬W(p) and ¬W(q) are assumed

(60) ¬PtC(p) and ¬PtC(q) PRIMARY IMPLICATURES

- we cannot conclude ¬B(p) and ¬B(q)
- No ignorance

Exclusivity can still be derived

(61) $\neg \mathrm{PtC}(p \wedge q)$ PRIMARY IMPLICATURE

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(62) $\mathrm{W}(p \wedge q)$ assumed to be false WILLINGNESS

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(61) $\neg \mathrm{PtC}(p \wedge q)$ PRIMARY IMPLICATURE

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(63) $\mathrm{PtC}(p \wedge q) \ \vee \ \mathrm{PtC}(\neg(p \wedge q))$

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(61) $\neg \mathrm{PtC}(p \wedge q)$ PRIMARY IMPLICATURE

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(63) $\mathrm{PtC}(p \wedge q) \vee \mathrm{PtC}(\neg(p \wedge q))$
$[\mathrm{B}(p \wedge q) \wedge \mathrm{W}(p \wedge q)] \vee [\mathrm{B}(\neg(p \wedge q)) \wedge \mathrm{W}(\neg(p \wedge q))]$ IA

Exclusivity can still be derived

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$[\mathrm{B}(p \wedge q) \wedge \mathrm{W}(p \wedge q)] \vee [\mathrm{B}(\neg(p \wedge q)) \wedge \mathrm{W}(\neg(p \wedge q))]$ IA

(64) $\Rightarrow [\mathrm{B}(\neg(p \wedge q)) \wedge \mathrm{W}(\neg(p \wedge q))]$

Exclusivity can still be derived

(61) $\neg \mathrm{PtC}(p \wedge q)$ PRIMARY IMPLICATURE

(62) $\mathrm{W}(p \wedge q)$ assumed to be false WILLINGNESS

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$[\mathrm{B}(p \wedge q) \wedge \mathrm{W}(p \wedge q)] \vee [\mathrm{B}(\neg(p \wedge q)) \wedge \mathrm{W}(\neg(p \wedge q))]$ IA

(64) $\Rightarrow [\mathrm{B}(\neg(p \wedge q)) \wedge \mathrm{W}(\neg(p \wedge q))]$

(65) $\Rightarrow \mathrm{B}(\neg(p \wedge q))$ SECONDARY EXCLUSIVITY IMPLICATURE

Game show contexts - In sum

- MQ is active in semicooperative contexts as well

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    - does not derive ignorance

Game show contexts - In sum

- MQ is active in semicooperative contexts as well
- The speaker is as cooperative as possible given the constraints in the context
- The more general formulation of MQ and the competence assumption
    - does not derive ignorance
    - does derive exclusivity

Conclusion

In sum

- The main inferences of disjunction

In sum

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- The standard pragmatic approach

In sum

- The main inferences of disjunction
- The standard pragmatic approach
- Semi-cooperative contexts have been argued to challenge this approach

In sum

- We confirmed and refined the challenge

Extension

- We extended the challenge by looking at the corresponding inferences at the presuppositional level

[18] Spector and Sudo 2017, Marty and Romoli 2021a, 2021b

Extension

- We extended the challenge by looking at the corresponding inferences at the presuppositional level
- Similar debate between a pragmatic and grammatical accounts[18]

[18] Spector and Sudo 2017, Marty and Romoli 2021a, 2021b

Extension

- We extended the challenge by looking at the corresponding inferences at the presuppositional level
- Similar debate between a pragmatic and grammatical accounts[18]
- Identical results in this case as well

[18] Spector and Sudo 2017, Marty and Romoli 2021a, 2021b

In sum

- We provided a response from the pragmatic approach based on generalising MQ and the opinionatedness assumption

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- Semi-cooperative contexts allow us to refine the assumptions underlying the hearer's reasoning over what the speaker said and could have said instead

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- We provided a response from the pragmatic approach based on generalising MQ and the opinionatedness assumption
- Semi-cooperative contexts allow us to refine the assumptions underlying the hearer's reasoning over what the speaker said and could have said instead
- and would have been willing to say

Thanks!

Extending to presuppositions

Extending to presuppositions

The corresponding inferences

Presuppositions: two things

(66) Bill is aware that Juni went abroad.

Presuppositions: two things

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$\rightsquigarrow$ *Juni went abroad* PRESUPPOSITION

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(66) Bill is aware that Juni went abroad.
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(67) Bill is not aware that Juni went abroad.
Is Bill aware that Juni went abroad?
If Bill is aware that Juni went abroad, he won't be happy

Presuppositions: two things

(66) Bill is aware that Juni went abroad.
$\rightsquigarrow$ *Juni went abroad* PRESUPPOSITION

(67) Bill is not aware that Juni went abroad.
Is Bill aware that Juni went abroad?
If Bill is aware that Juni went abroad, he won't be happy
$\rightsquigarrow$ *Juni went abroad*

Presuppositions: two things

(68) Bill is aware that Juni went abroad.
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Presuppositions: two things

(68) Bill is aware that Juni went abroad.
$\rightsquigarrow$ *Juni went abroad* PRESUPPOSITION

- the presupposition needs to be satisfied in the context - be already in the common ground

The main inferences of disjunction - presuppositional level[19]

(69) Bill is not aware that Juni visited Frankfurt or Düsseldorf.

[19] Spector and Sudo 2017, Marty and Romoli 2020a, 2020b

The main inferences of disjunction - presuppositional level[19]

(69) Bill is not aware that Juni visited Frankfurt or Düsseldorf.

$\rightsquigarrow$ *she didn't visit both* PRESUPPOSED EXCLUSIVITY

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The main inferences of disjunction - presuppositional level[19]

(69) Bill is not aware that Juni visited Frankfurt or Düsseldorf.

⇝ *she didn't visit both* PRESUPPOSED EXCLUSIVITY

⇝ *the speaker doesn't know which* PRESUPPOSED IGNORANCE

[19] Spector and Sudo 2017, Marty and Romoli 2020a, 2020b

Extending to presuppositions

The corresponding approach

Presuppositional level

- Similar assumptions here to derive those corresponding presupposed inferences

Maximize presuppositions and recent extensions[20]

- The corresponding of the maxim of quantity at the presuppositional level: speakers presuppose as much as possible

[20] Heim 1991, Spector and Sudo 2017

Maximize presuppositions and recent extensions[20]

- The corresponding of the maxim of quantity at the presuppositional level: speakers presuppose as much as possible
- This principle allows to derive infelicity effects and presupposed implicatures

[20] Heim 1991, Spector and Sudo 2017

Maximize presuppositions and recent extensions[20]

- The corresponding of the maxim of quantity at the presuppositional level: speakers presuppose as much as possible
- This principle allows to derive infelicity effects and presupposed implicatures

(70) #A sun is shining

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Maximize presuppositions and recent extensions[20]

- The corresponding of the maxim of quantity at the presuppositional level: speakers presuppose as much as possible
- This principle allows to derive infelicity effects and presupposed implicatures

(70) #A sun is shining

(71) A director of the company will speak today
$\rightsquigarrow$ *The company has more than one director*

[20] Heim 1991, Spector and Sudo 2017

Remember the maxim of quantity

If ϕ and ψ are both relevant to the conversation, ψ is more informative than ϕ, and ψ is among the Alternatives to ϕ, then if the speaker believes both are true, the speaker should prefer ψ to ϕ.

Presupposed maxim of quantity[21]

If ϕ_p and ψ_q are both relevant to the conversation, q is more informative than p, and ψ_q is among the Alternatives to ϕ_p, then if both p and q are satisfied in the context, the speaker should prefer ψ_q to ϕ_p.

[21] Spector and Sudo 2017

Presupposed implicatures (first step)[22]

The fact that a speaker uttered a statement (ϕ_p) with presupposition p when she could have produced the alternative (ψ_q) with stronger presupposition q means that q is not satisfied in the context (i.e. not already in the common ground ($\neg \mathrm{CG}(q)$).

[22] Adapted from Spector and Sudo 2017

Accommodation[23]

We know that speakers can nonetheless utter presuppositional sentence even when their presuppositions are not already commonly believed and those will often be accommodated

[23] Lewis 1979, Stalnaker 1973, 1998, von Fintel 2000

Accommodation[23]

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(72) I am sorry I am late, I had to pick my sister at the airport.

[23] Lewis 1979, Stalnaker 1973, 1998, von Fintel 2000

Accommodation[23]

We know that speakers can nonetheless utter presuppositional sentence even when their presuppositions are not already commonly believed and those will often be accommodated

(72) I am sorry I am late, I had to pick my sister at the airport.
$\rightsquigarrow$ *I have a sister*

[23] Lewis 1979, Stalnaker 1973, 1998, von Fintel 2000

Presupposed implicatures (given accommodation)[25]

- So why didn't the speaker utter the alternative ψ_q in place of ϕ_p, and have q accommodated?

[24] **Authority**: A speaker is an authority about q if she could have convinced the hearer that q is true simply by presupposing q.
[25] Chemla 2008

Presupposed implicatures (given accommodation)[25]

- So why didn't the speaker utter the alternative ψ_q in place of ϕ_p, and have q accommodated?
- Two possible reasons:

[24] **Authority**: A speaker is an authority about q if she could have convinced the hearer that q is true simply by presupposing q.
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Presupposed implicatures (given accommodation)[25]

- So why didn't the speaker utter the alternative ψ_q in place of ϕ_p, and have q accommodated?
- Two possible reasons:
  1. either she does not believe q, i.e., $\neg B(q)$, or

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- So why didn't the speaker utter the alternative ψ_q in place of ϕ_p, and have q accommodated?
- Two possible reasons:
  1. either she does not believe q, i.e., $\neg B(q)$, or
  2. she believes q but does not have the authority, i.e., $\neg A(q)$[24]

[24] **Authority**: A speaker is an authority about q if she could have convinced the hearer that q is true simply by presupposing q.
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Presupposed implicatures (given accommodation)[25]

- So why didn't the speaker utter the alternative ψ_q in place of ϕ_p, and have q accommodated?
- Two possible reasons:
  1. either she does not believe q, i.e., $\neg B(q)$, or
  2. she believes q but does not have the authority, i.e., $\neg A(q)$[24]

  Consequence: $\neg B(q)$ if $A(q)$ holds

[24] **Authority**: A speaker is an authority about q if she could have convinced the hearer that q is true simply by presupposing q.
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Secondary presupposed implicatures

Combining primary presupposed implicatures with authority and opinionatedness leads to secondary presupposed implicatures

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(73) $\neg \mathsf{B}(q) \vee \neg \mathsf{A}(q)$ PRIMARY PRESUPPOSED IMPLICATURE

Secondary presupposed implicatures

Combining primary presupposed implicatures with authority and opinionatedness leads to secondary presupposed implicatures

(73) $\neg \mathsf{B}(q) \vee \neg \mathsf{A}(q)$ PRIMARY PRESUPPOSED IMPLICATURE

(74) $\mathsf{A}(q)$ AUTHORITY

Secondary presupposed implicatures

Combining primary presupposed implicatures with authority and opinionatedness leads to secondary presupposed implicatures

(73) $\neg \mathsf{B}(q) \vee \neg \mathsf{A}(q)$ PRIMARY PRESUPPOSED IMPLICATURE

(74) $\mathsf{A}(q)$ AUTHORITY

(75) $\mathsf{B}(q) \vee \mathsf{B}(\neg q)$ OPINIONATEDNESS

Secondary presupposed implicatures

Combining primary presupposed implicatures with authority and opinionatedness leads to secondary presupposed implicatures

(73) $\neg \mathsf{B}(q) \vee \neg \mathsf{A}(q)$ PRIMARY PRESUPPOSED IMPLICATURE

(74) $\mathsf{A}(q)$ AUTHORITY

(75) $\mathsf{B}(q) \vee \mathsf{B}(\neg q)$ OPINIONATEDNESS

(76) $\mathsf{B}(\neg q)$ SECONDARY PRESUPPOSED IMPLICATURE

Application to presupposed disjunction

(77) Bill is not aware that $[_{p \vee q}$ Juni visited F or D]

[26] $\neg CG(p), \neg CG(q), \neg CG(p \wedge q)$

Application to presupposed disjunction

(77) Bill is not aware that $[_{p \vee q}$ Juni visited F or D]

(78) a. Bill is not aware that $[_{p}$ Juni visited F]
b. Bill is not aware that $[_{q}$ Juni visited D]
c. Bill is not aware that $[_{p \wedge q}$ Juni visited F and D]

[26] $\neg CG(p), \neg CG(q), \neg CG(p \wedge q)$

Application to presupposed disjunction

(77) Bill is not aware that $[_{p \vee q}$ Juni visited F or D]

(78)
a. Bill is not aware that $[_{p}$ Juni visited F]
b. Bill is not aware that $[_{q}$ Juni visited D]
c. Bill is not aware that $[_{p \wedge q}$ Juni visited F and D]

- The first step is concluding that none of the alternatives is commonly believed[26]

[26] $\neg CG(p), \neg CG(q), \neg CG(p \wedge q)$

Application to presupposed disjunction

- Why didn't the speaker utter any of the alternatives and have their presuppositions accommodated?

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- Why didn't the speaker utter any of the alternatives and have their presuppositions accommodated?
- Either because it's not true that she believes them or because she doesn't have the authority to
- Assuming that she does have authority about p and q it follows that $\neg B(p)$ and $\neg B(q)$, and $\neg B(p \wedge q)$

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If we want to derive presupposed exclusivity:

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- A similar pragmatic account with a MQ at the presuppositional level and auxiliary assumptions (e.g., Authority+Opinionatedness)
- Crucially, the additional steps deriving EXCLUSIVITY also derives IGNORANCE in the process

Prediction

- **Prediction**: we cannot have presupposed EXCLUSIVITY without also having presupposed IGNORANCE

Experiment 2

Extending to presuppositions

- The same challenge can be extended to pragmatic accounts of presupposed implicatures

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- Establishing the challenge this domain as well

Material

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(83) Previous contestants were unaware that there is slime in box 20 or 25

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Design

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- Two within-subject factors:
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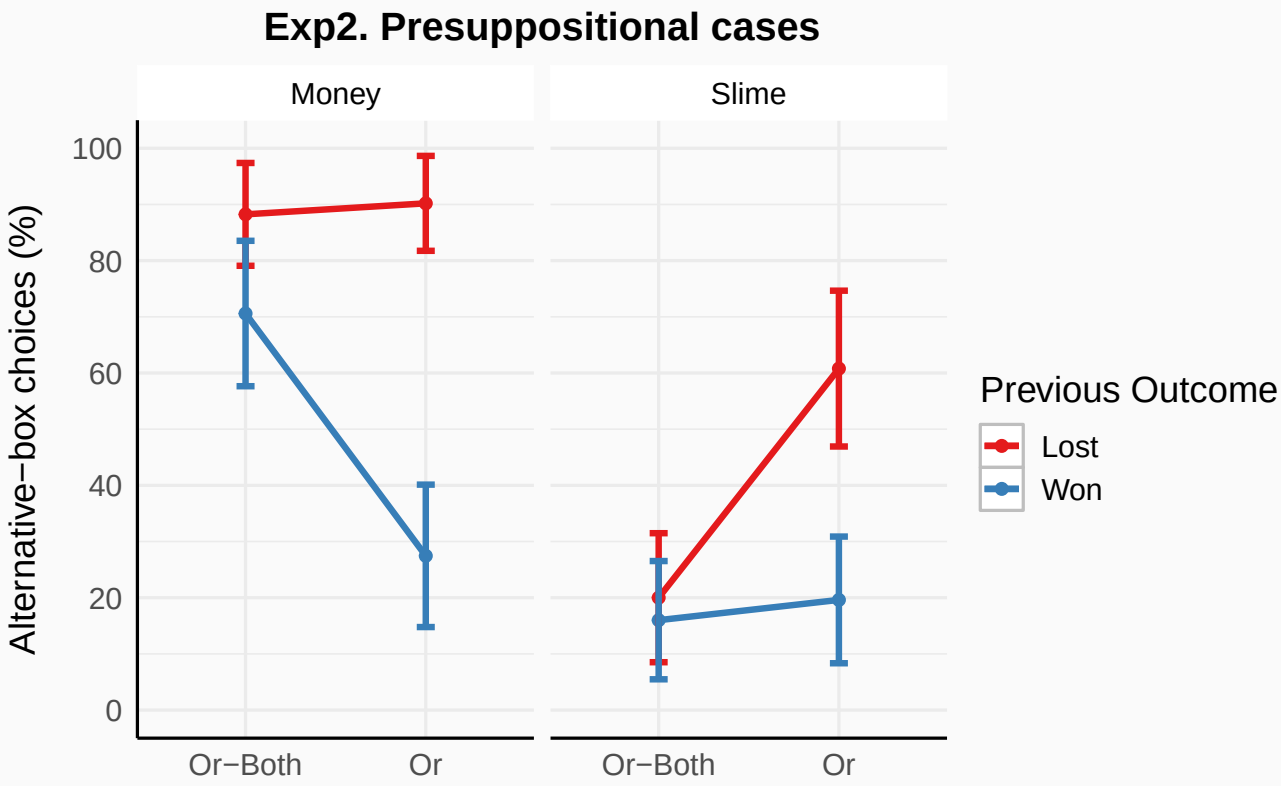
    - previous outcome: won or lost

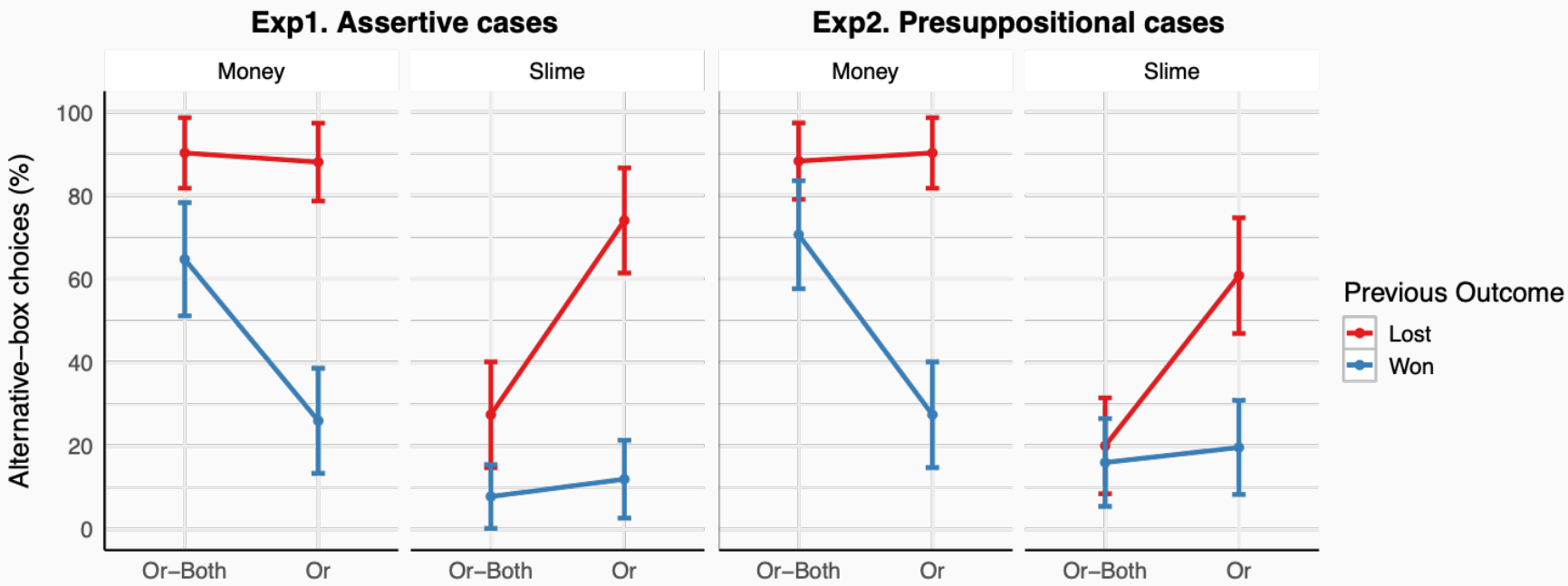
Participants

- 200 participants recruited through Prolific (100 per game type)

Results


Exp2. Presuppositional cases
Money
Slime
Alternative−box choices (%)
100
80
60
40
20
0
Or−Both
Or
Or−Both
Or
Previous Outcome
Lost
Won

Results



- Same effects as in the assertion case

Discussion

- Extending the challenge to pragmatic accounts of presupposed implicatures

Experiment 2

A final note

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- So why did hearer make the informative attitude assumption nonetheless?

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