"Maybe" not all scalar implicatures are created equal

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sometimes
...not all the time?

Scalar inference: The interpretation of one expression as meaning some stronger alternative expression is not true

A: "Did Quinn eat his dinner?"
B: "He ate **some of it**."

= He ate at least a bit (more than none)
semantic/logical component

= He ate a bit, but *not all*
pragmatic component

A: "Will Quinn arrive on time?"
B: "**It's possible**."

= The likelihood is greater than 0%, up to and including 100%
semantic/logical component

= It's possible, but *not certain*
pragmatic component

Not all comes from **pragmatics**; *"Not none"* comes from **semantics**

Semantic component: not cancellable

- Some of the classes are difficult.

  (*at least one of the classes is difficult)*

  *In fact, ***none*** of them are.

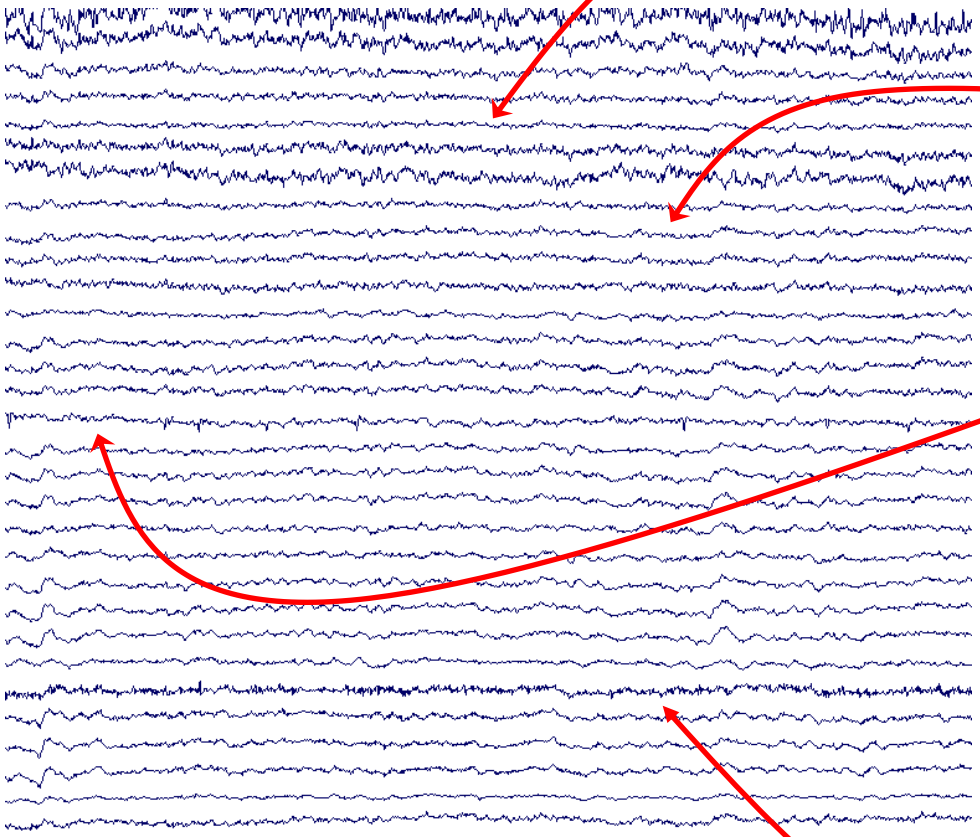
Pragmatic component: cancellable

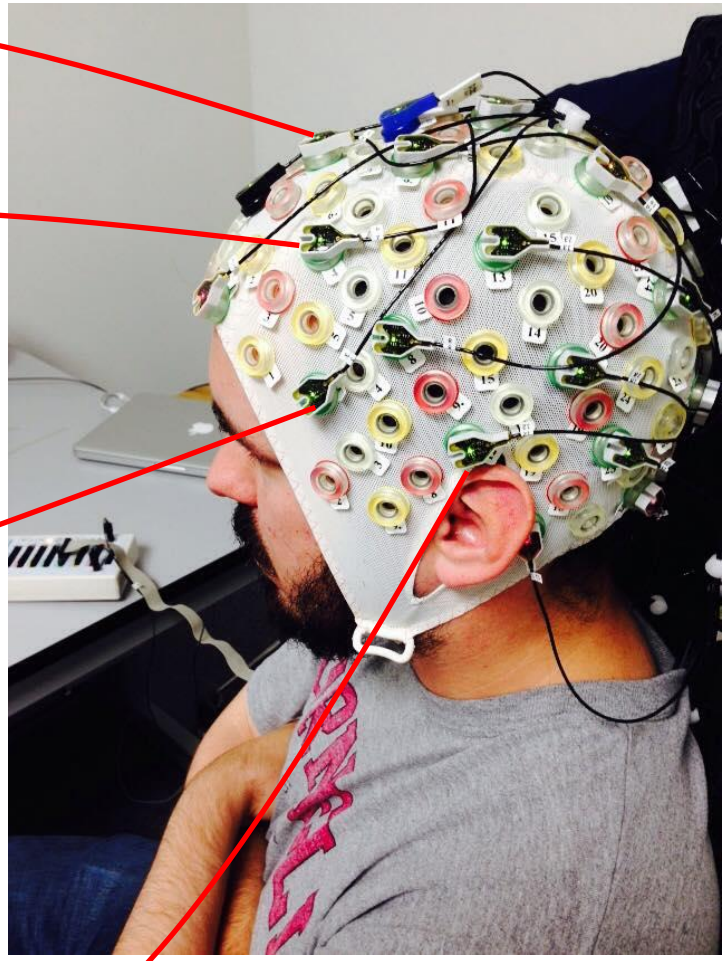
- Some of the classes are difficult.

  (not all the classes are difficult)

  In fact, ***all*** of them are

Electroencephalography (EEG)

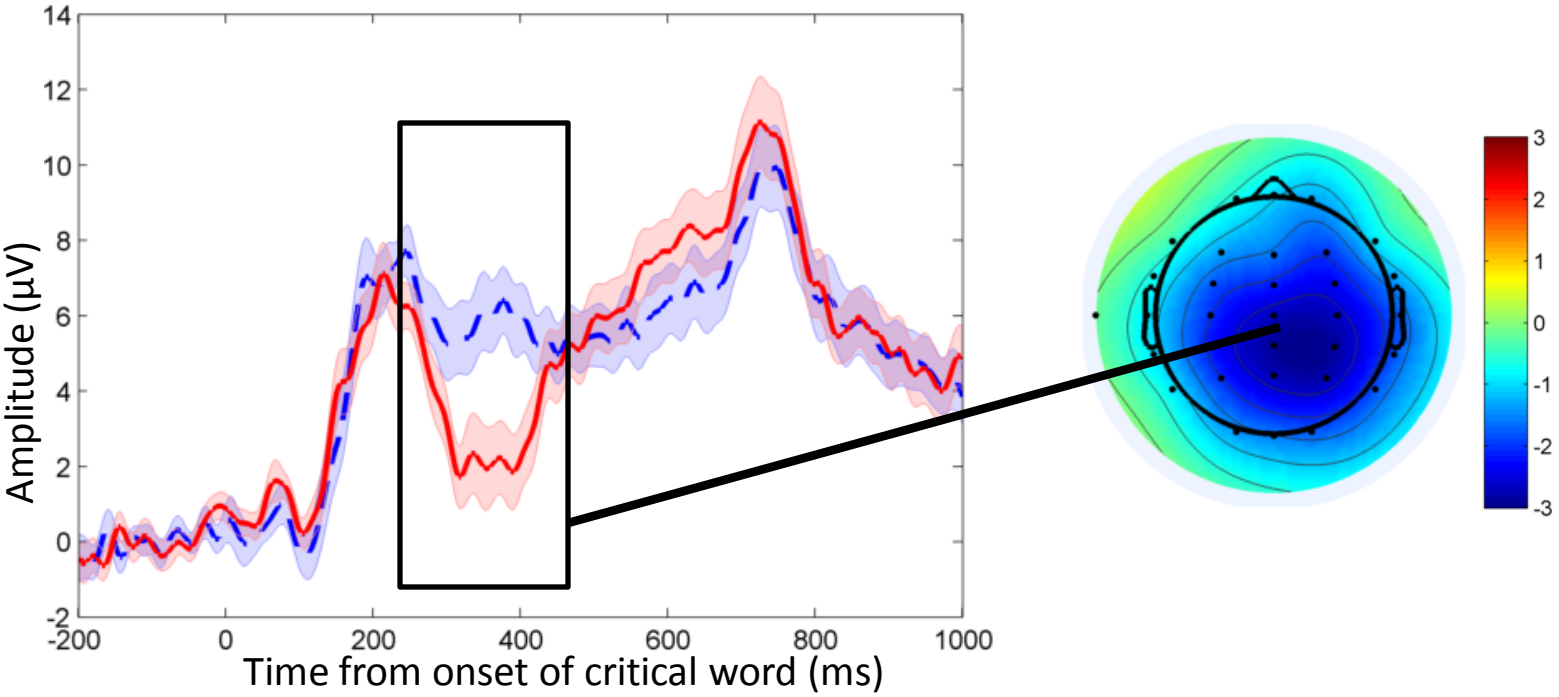




Event-related potentials

*I drink my coffee with cream and **sugar**.*

*I drink my coffee with cream and **dog**.*



Advantages of using ERP

- ERPs are an *implicit* measure---no need to directly ask for people's interpretation of *some*
  - As opposed to offline methods, e.g.:

    "*Some cats are mammals* --- is this sentence correct?"

Advantages of using ERP (2)

- High time resolution: observing what happens at the moment an inference is triggered

- Ability to distinguish between qualitatively different processes

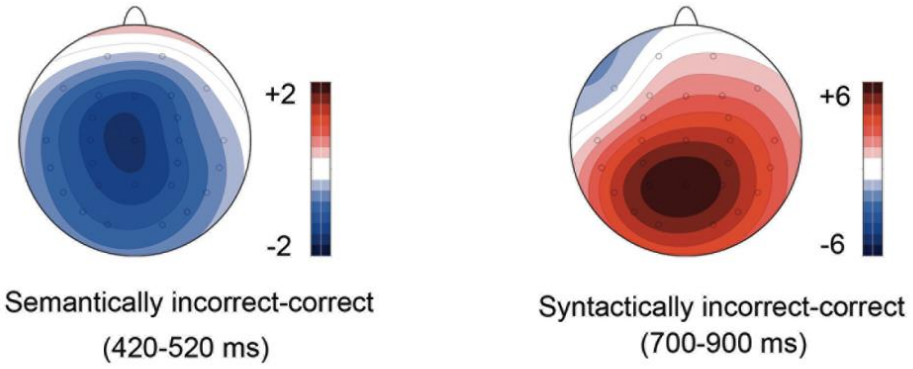


Figure from Schacht et al. (2014)

ERP studies on scalar implicature

- *SOME +> NOT ALL*
  - Noveck & Posada (2003), Nieuwland et al. (2010), Politzer-Ahles et al. (2013), Hunt et al. (2013), Sikos et al. (2013), Spychalska et al. (2013), Shetreet et al. (2013, 2014), Panizza et al. (2014), Hartshorne et al. (in press), Politzer-Ahles & Gwilliams (under review), Zhan et al. (in prep.)
- *OR +> ONE OR THE OTHER, NOT BOTH*
  - Chevallier et al. (2010)

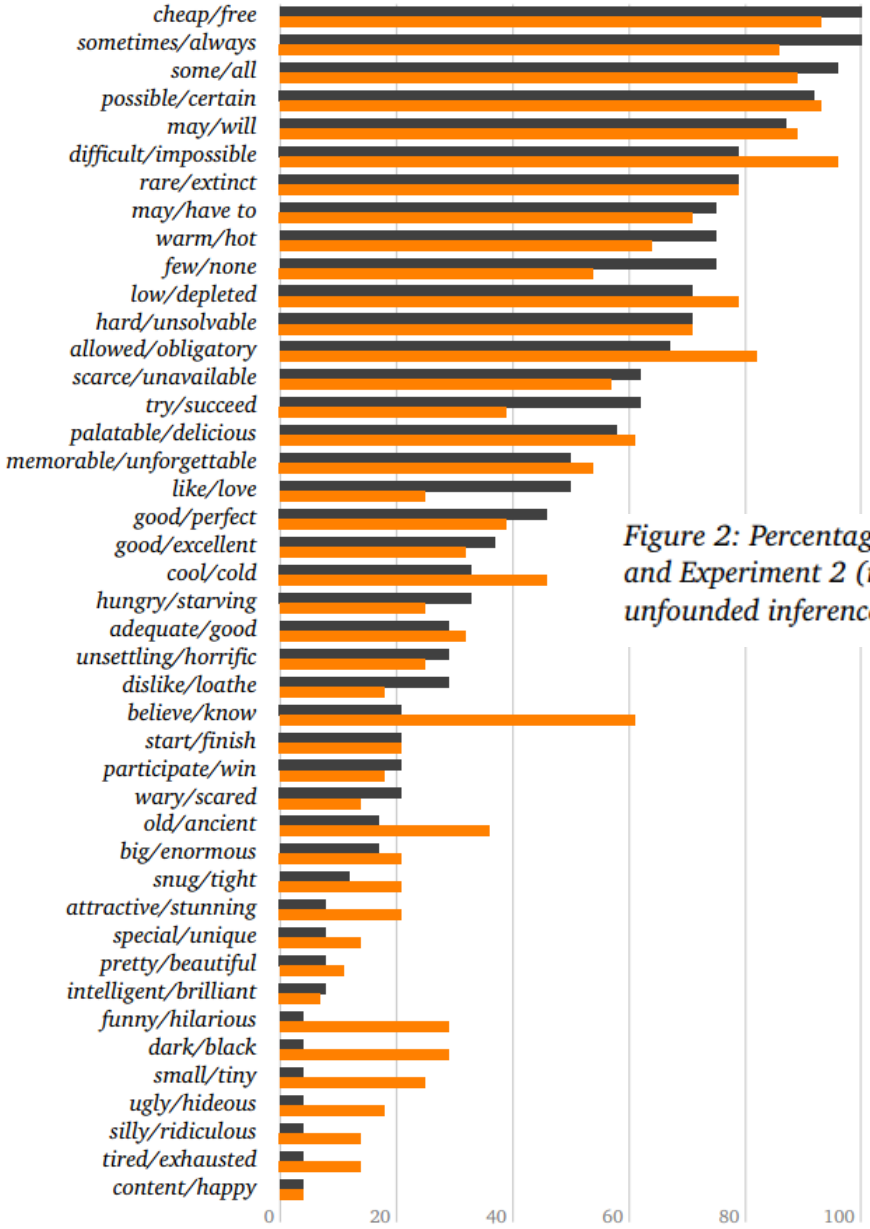
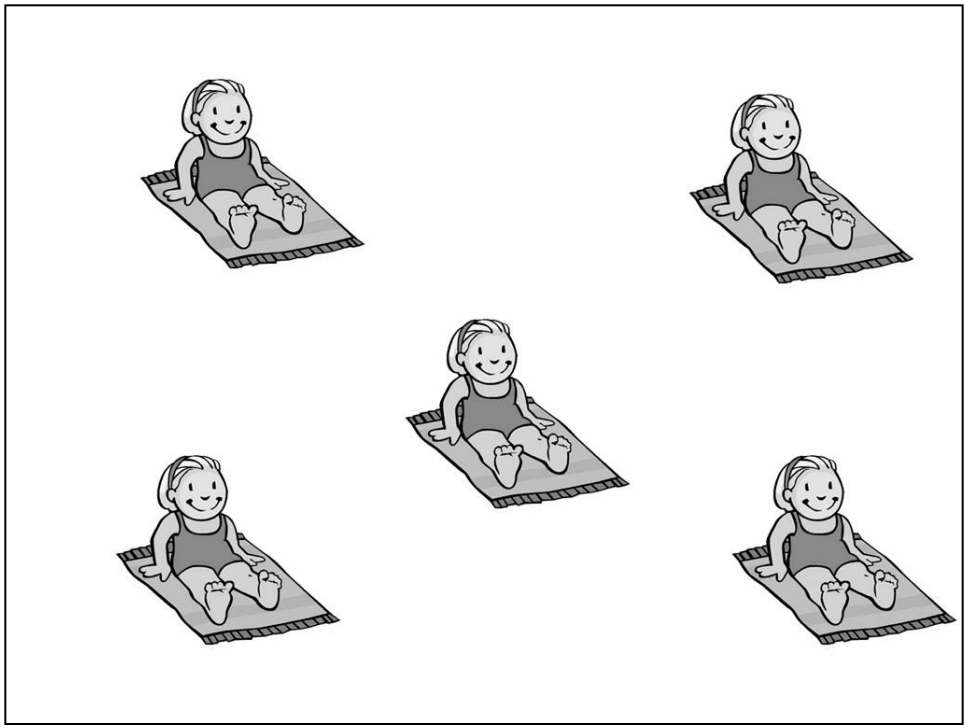


Figure 2: Percentages of positive responses in Experiment 1 (neutral content, dark grey) and Experiment 2 (non-neutral content, orange). The acceptance rates for entailments and unfounded inferences were 92% and 6%.

van Tiel et al. (2014)

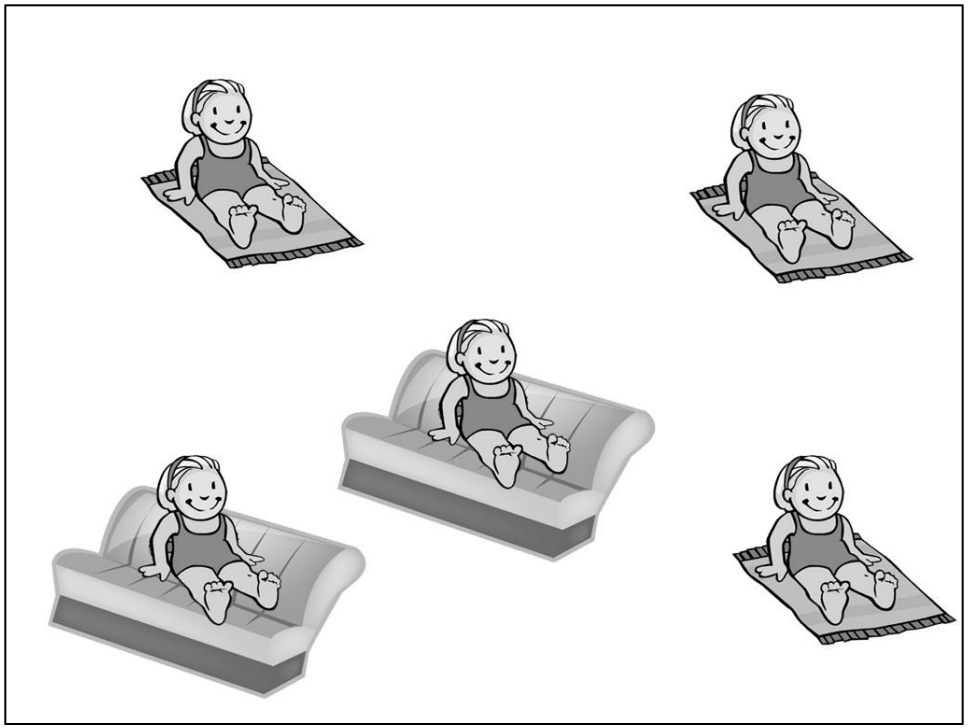
Pragmatically infelicitous “some”



图片里，	**有的**	女孩	坐在	毯子上	晒太阳。
In the picture,	**some of**	the girls	are sitting	on blankets	suntanning.

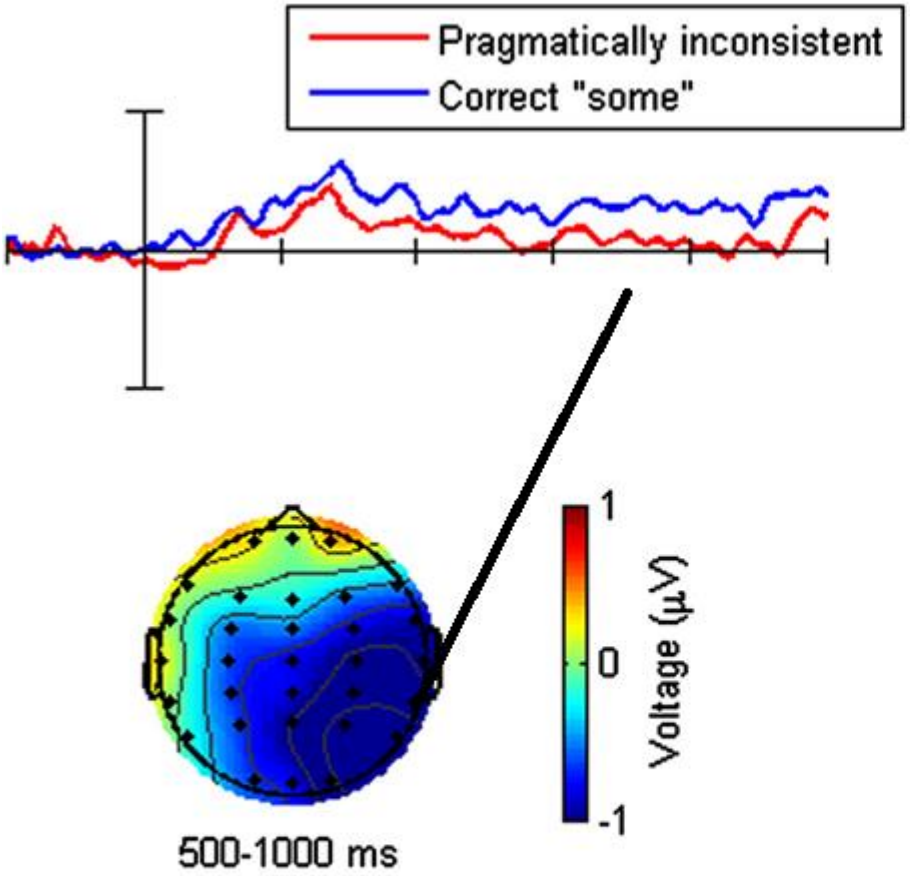
Politzer-Ahles, Fiorentino, Jiang, & Zhou (2013); Politzer-Ahles (2013)

Semantically false “all”

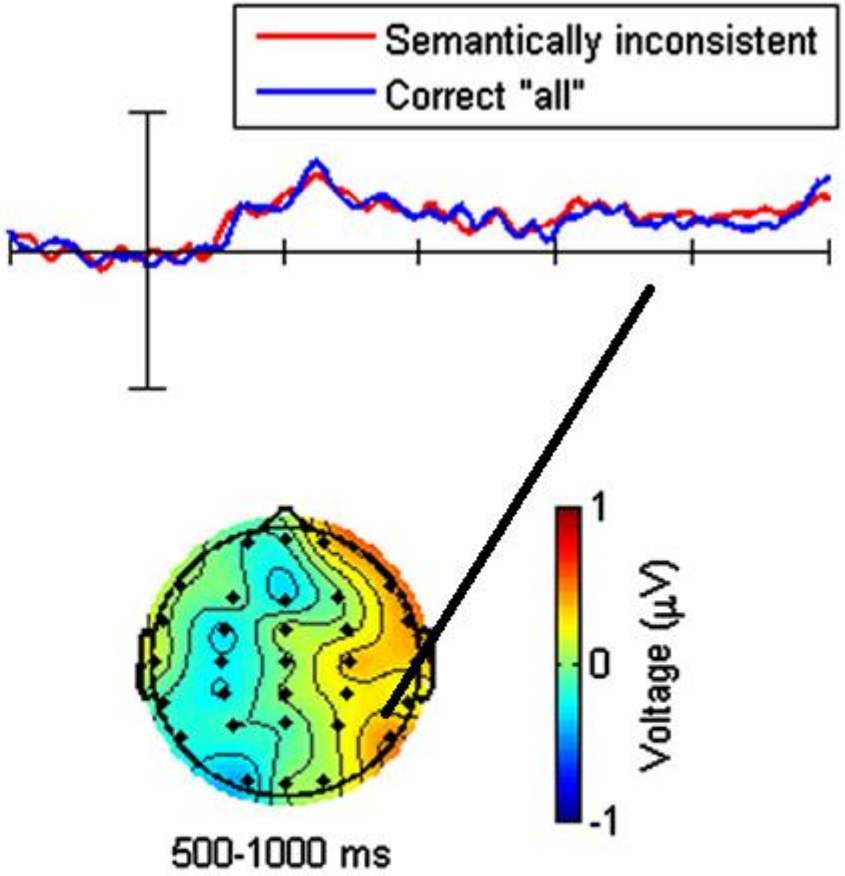


图片里，	**所有的**女孩	都	坐在	毯子上	晒太阳。
In the picture,	**all of**	the girls DOU	are sitting on blankets		suntanning.

Politzer-Ahles, Fiorentino, Jiang, & Zhou (2013); Politzer-Ahles (2013)

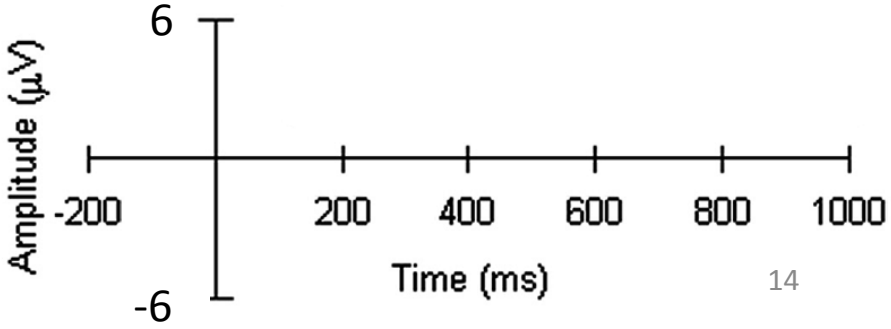


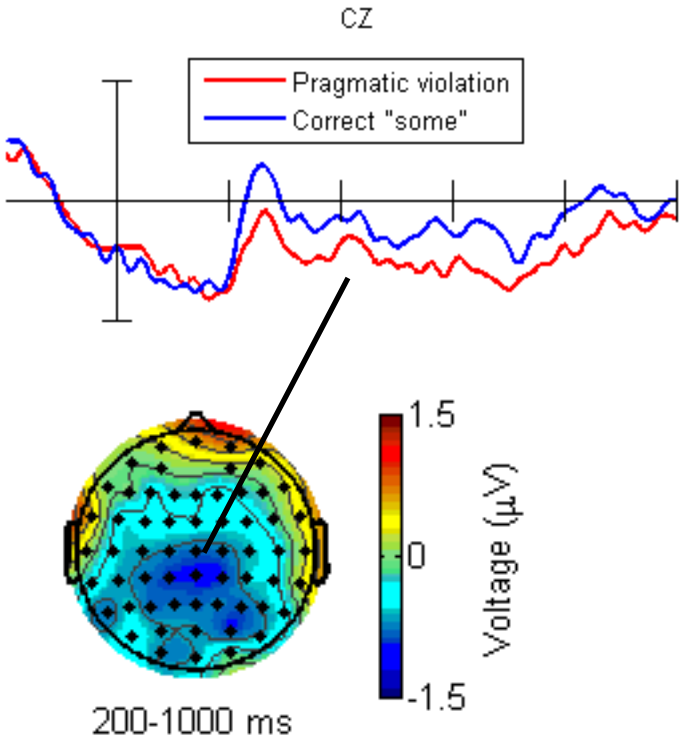
Pragmatically Inconsistent - Correct "some"

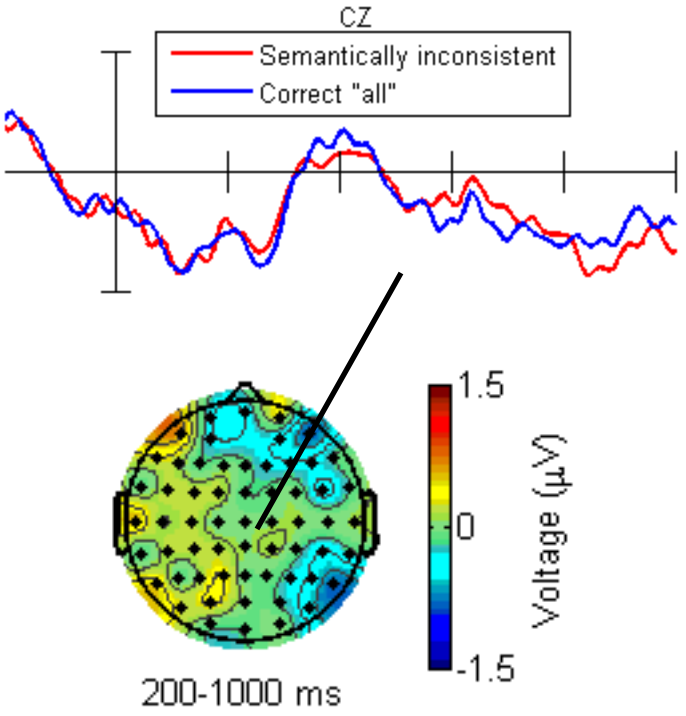


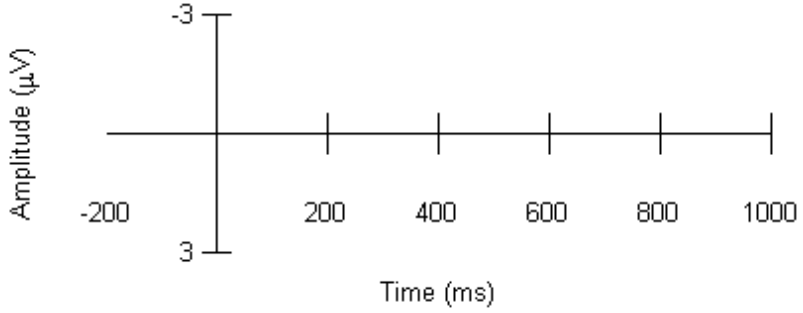
Semantically Inconsistent - Correct "all"

Late posterior negativity, only for pragmatically inconsistent sentences









Auditory replication: Sustained broad negativity, only for pragmatically inconsistent sentences

ERPs suggest that semantic and pragmatic components of these quantifiers are processed differently...

...does this extend to other scalar terms?

...is this specific effect (sustained negativity) about pragmatics in general, or specific to that experimental design?

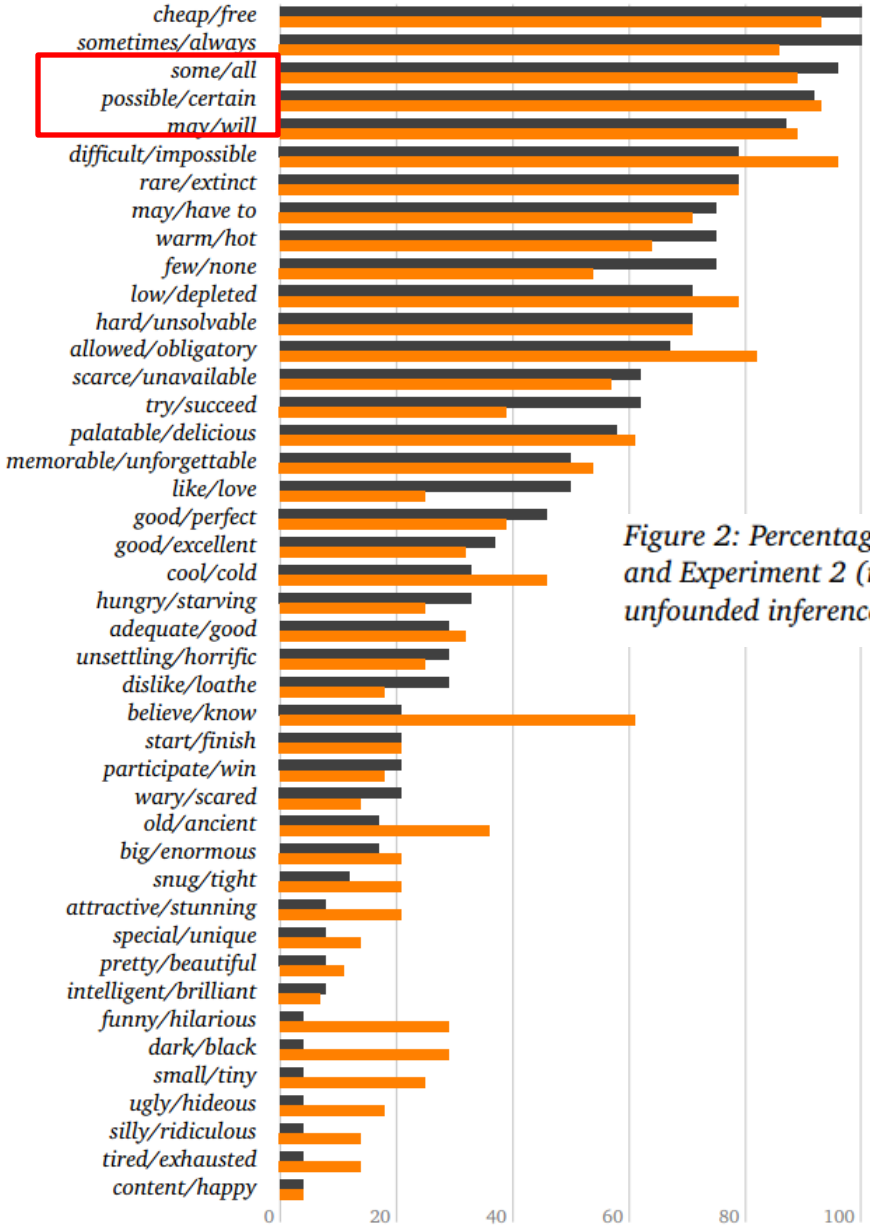


Figure 2: Percentages of positive responses in Experiment 1 (neutral content, dark grey) and Experiment 2 (non-neutral content, orange). The acceptance rates for entailments and unfounded inferences were 92% and 6%.

van Tiel et al. (2014)

No violation

Will all the soda in this pitcher fit into the cup?

maybe

Semantic violation

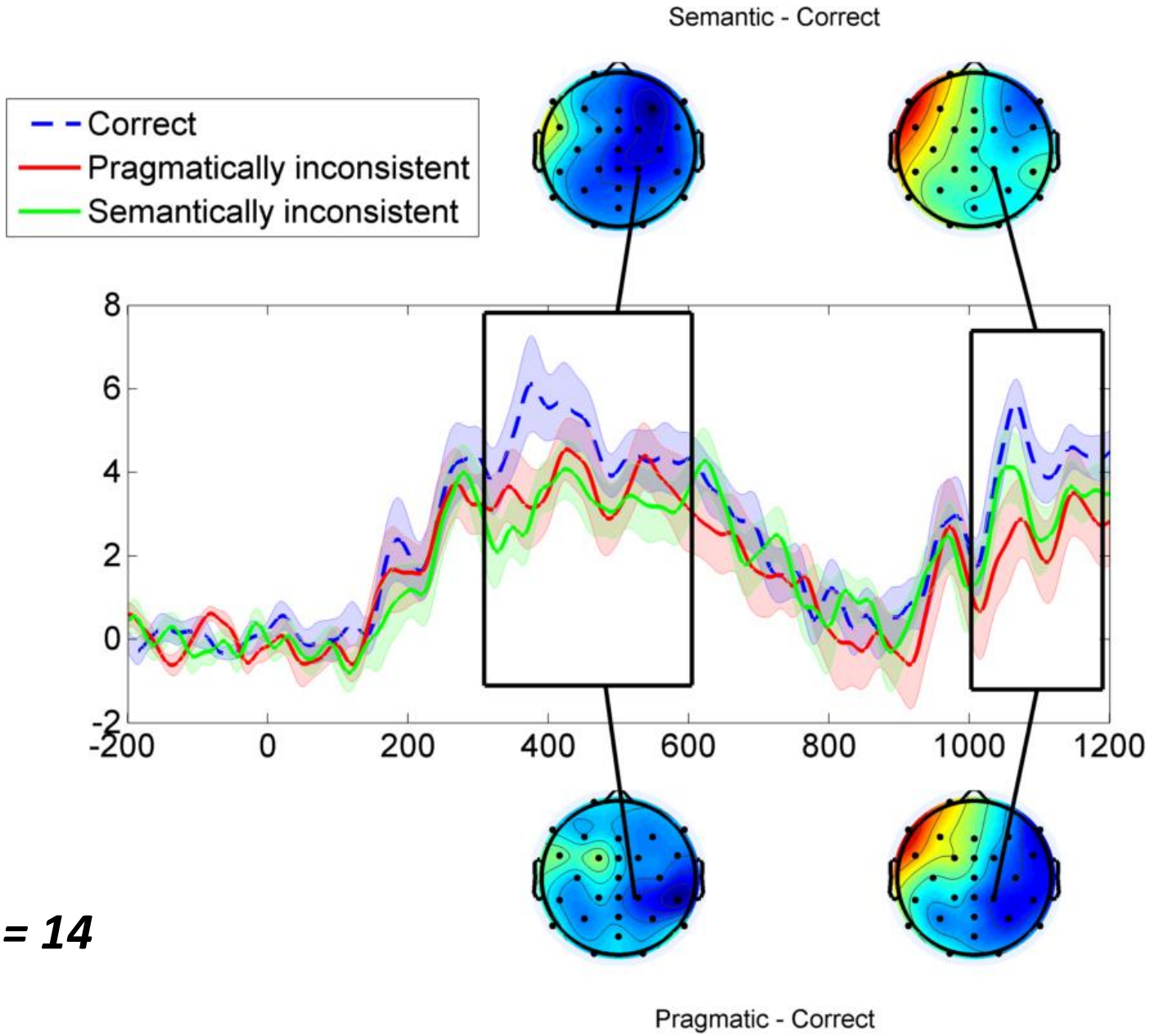
Will all the soda in this pitcher fit into the cup?

maybe

Pragmatic violation

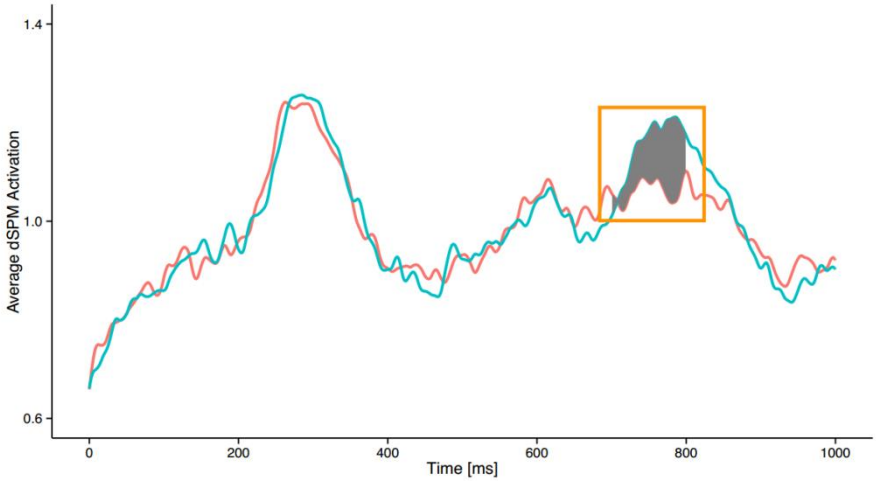
Will all the soda in this pitcher fit into the cup?

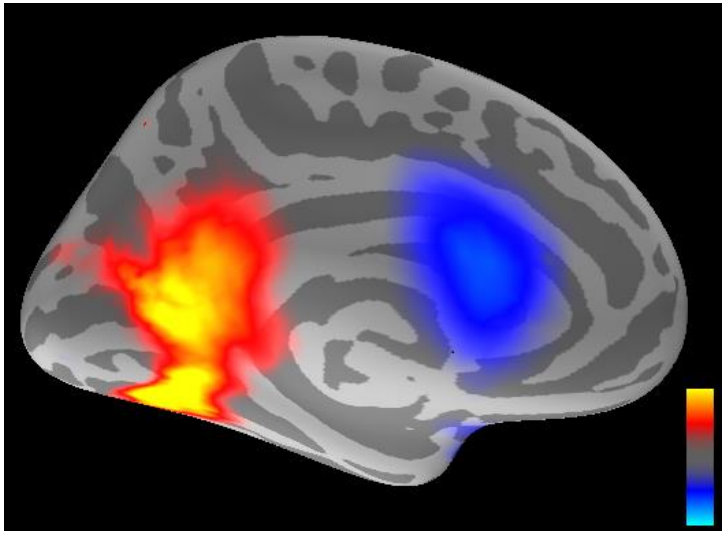
maybe

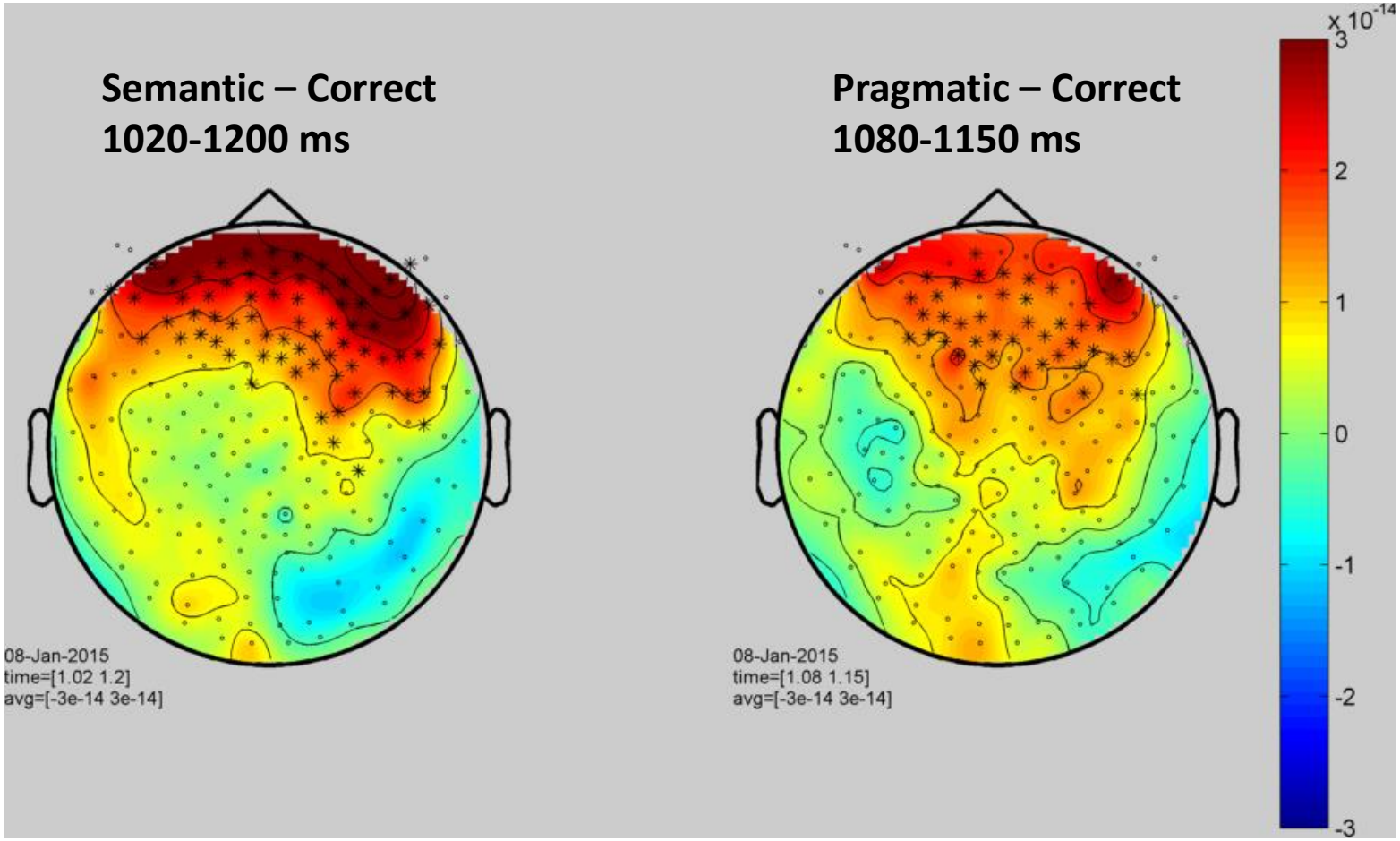

Semantic - Correct
Correct
Pragmatically inconsistent
Semantically inconsistent
8
6
4
2
0
-2
-200
0
200
400
600
800
1000
1200
Pragmatic - Correct

N = 14

Magnetoencephalography






Semantic – Correct
1020-1200 ms
08-Jan-2015
time=[1.02 1.2]
avg=[-3e-14 3e-14]
Pragmatic – Correct
1080-1150 ms
08-Jan-2015
time=[1.08 1.15]
avg=[-3e-14 3e-14]
x 10^-14
3
2
1
0
-1
-2
-3

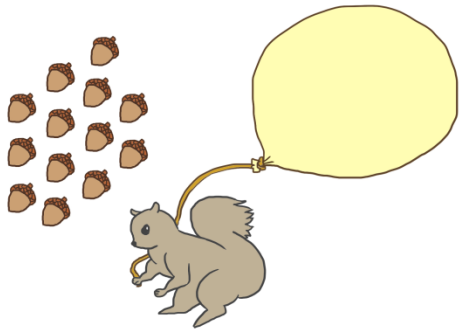
N = 11

- *In the picture, <u>some of</u> the girls are sitting on blankets.*

- *Will all the soda in this pitcher fit in the cup? <u>Maybe</u>.*

Adverbs - No violation

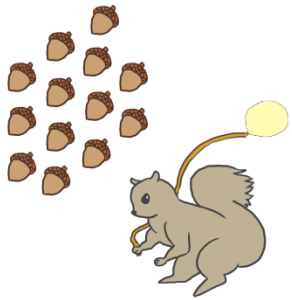
On the way to collect acorns... Will he be able to get them all?



The squirrel <u>might</u> get all the acorns.

Adverbs - Semantic violation

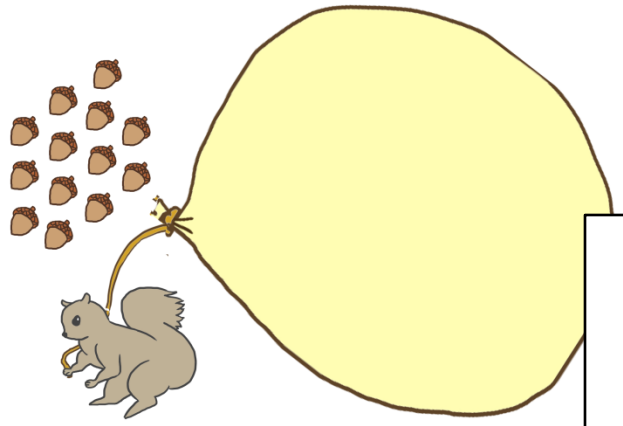
On the way to collect acorns... Will he be able to get them all?



The squirrel <u>might</u> get all the acorns.

Adverbs - Pragmatic violation

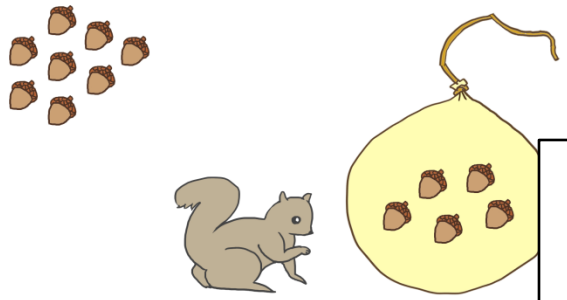
On the way to collect acorns... Will he be able to get them all?



The squirrel <u>might</u> get all the acorns.

Quantifiers - No violation

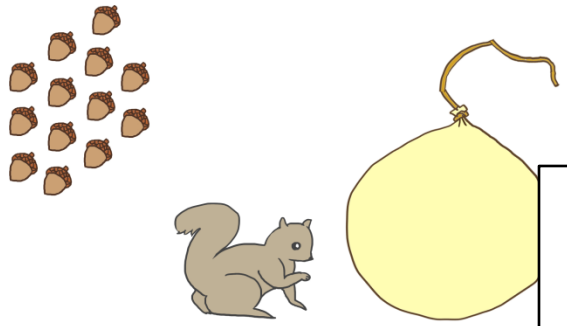
Back from collecting acorns... Let's see how many of them he got.



The squirrel got <u>some</u> of the acorns.

Quantifiers – Semantic violation

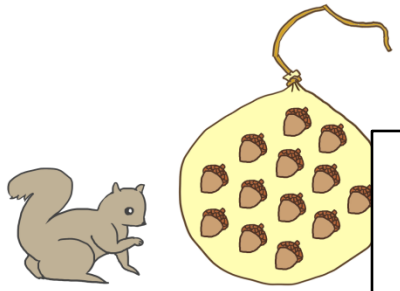
Back from collecting acorns... Let's see how many of them he got.



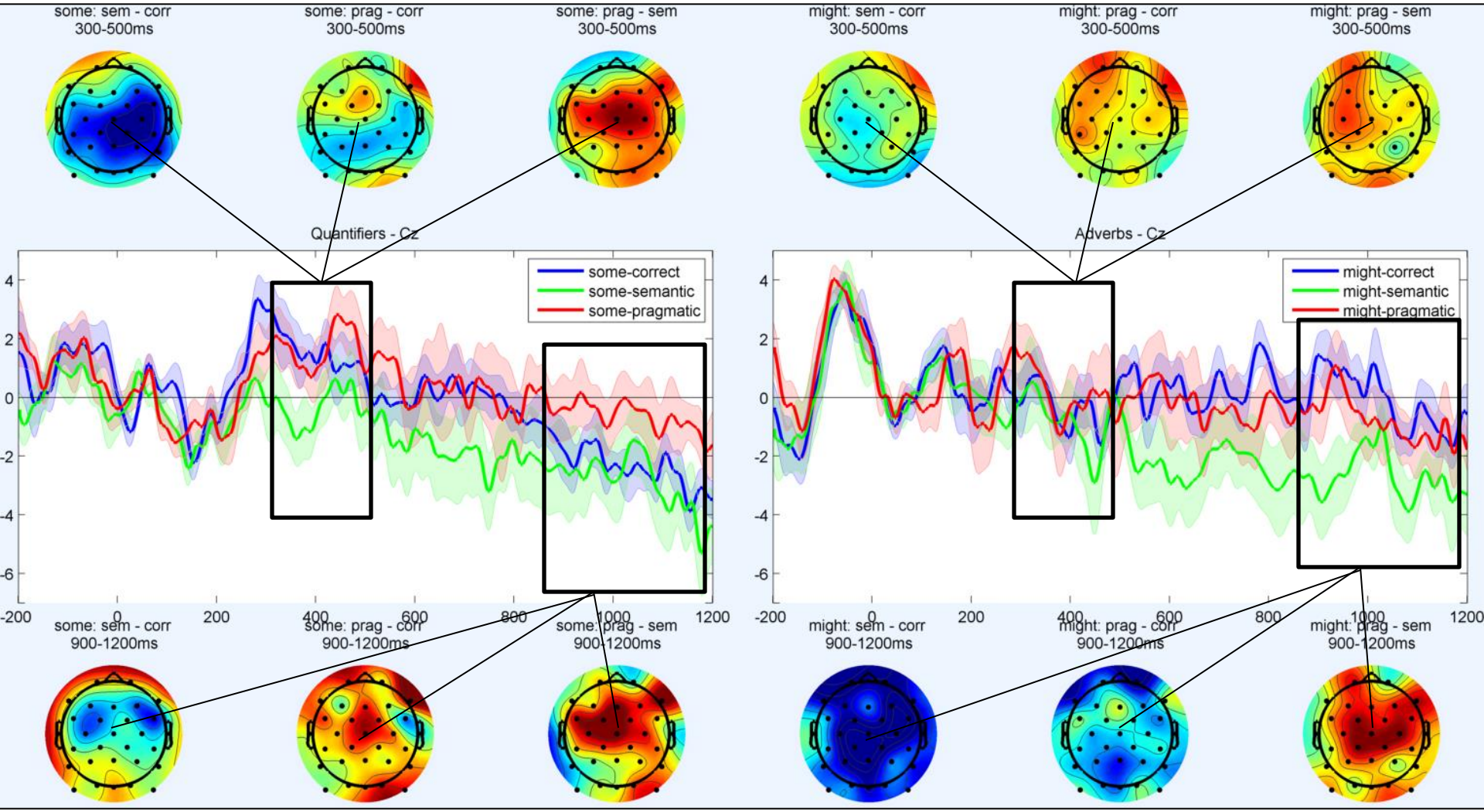
The squirrel got <u>some</u> of the acorns.

Quantifiers – Pragmatic violation

Back from collecting acorns... Let's see how many of them he got.



The squirrel got <u>some</u> of the acorns.


some: sem - corr
300-500ms
some: prag - corr
300-500ms
some: prag - sem
300-500ms
might: sem - corr
300-500ms
might: prag - corr
300-500ms
might: prag - sem
300-500ms
Quantifiers - Cz
Adverbs - Cz
some-correct
some-semantic
some-pragmatic
might-correct
might-semantic
might-pragmatic
some: sem - corr
900-1200ms
some: prag - corr
900-1200ms
some: prag - sem
900-1200ms
might: sem - corr
900-1200ms
might: prag - corr
900-1200ms
might: prag - sem
900-1200ms

N = 9

Conclusions

- Dissociating pragmatic from semantic ERP effects, and even observing pragmatic effects at all, depends on the experimental paradigm

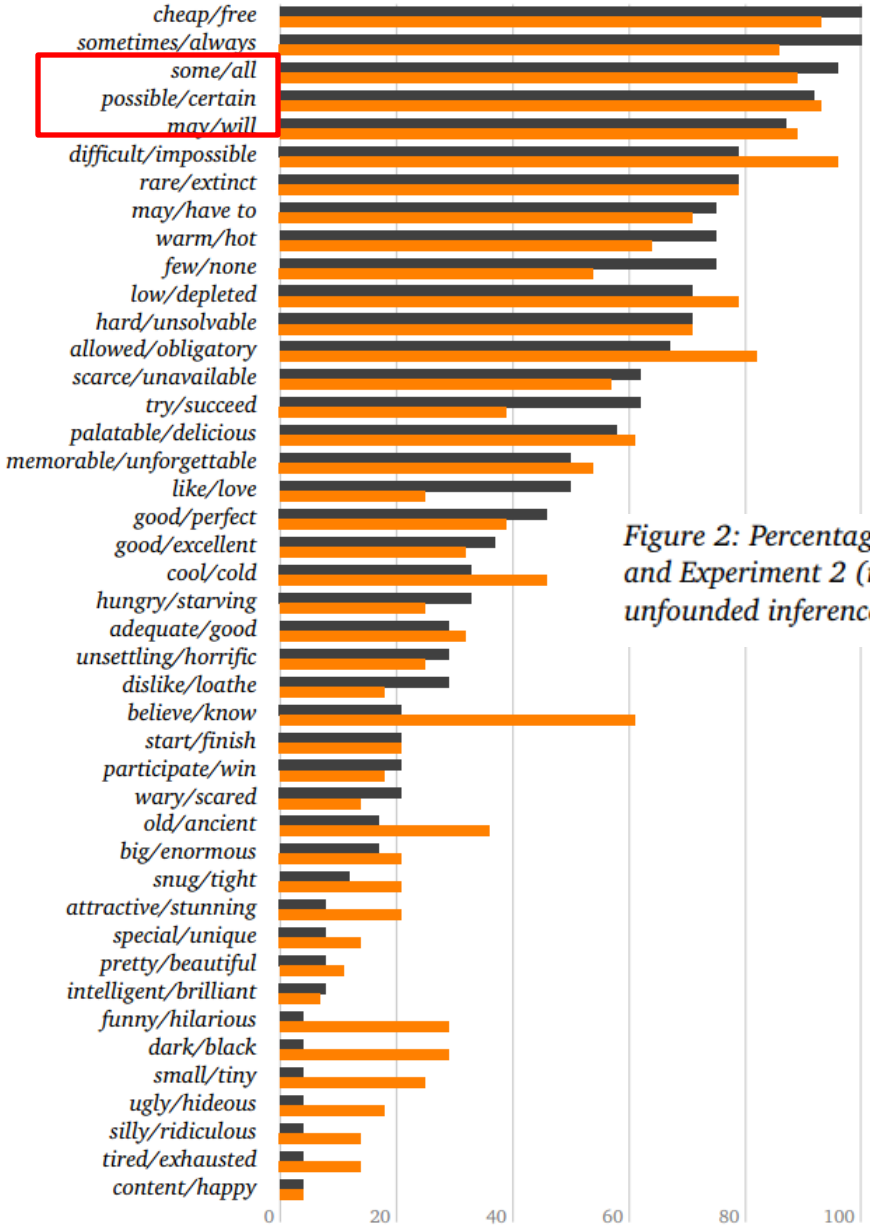
- Preliminary evidence that, when pragmatic effects were observed on *maybe*, they were different from pragmatic effects previously observed on *some*

Why might *some* and *maybe* differ?

- Number and nature of the relevant alternatives in the scale/set?

- *Some but not all* is easy to explicitly evaluate visually; *maybe* is not, it requires some imagining

- *maybe +> not definitely* may be less defeasible than *some +> not all*



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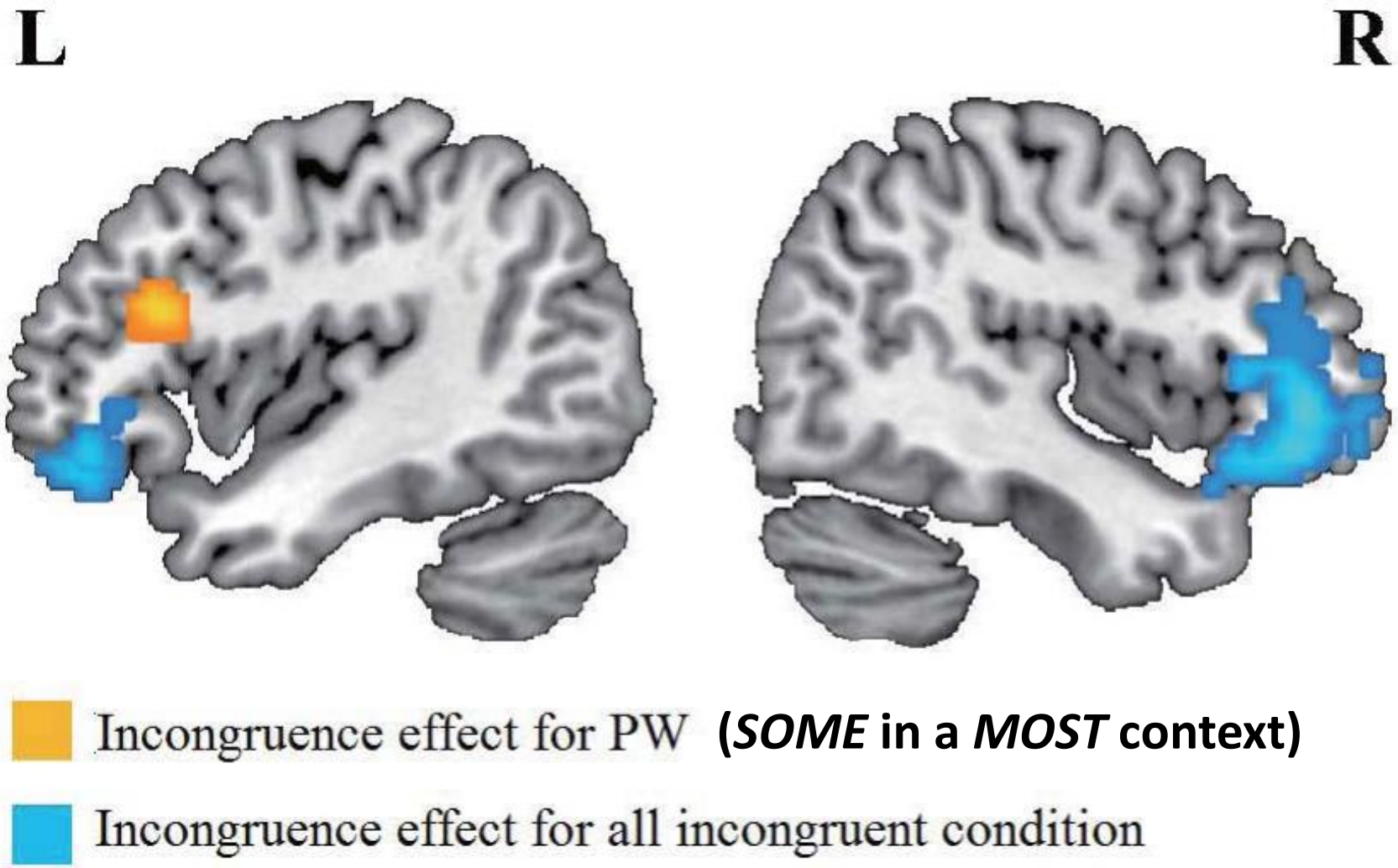
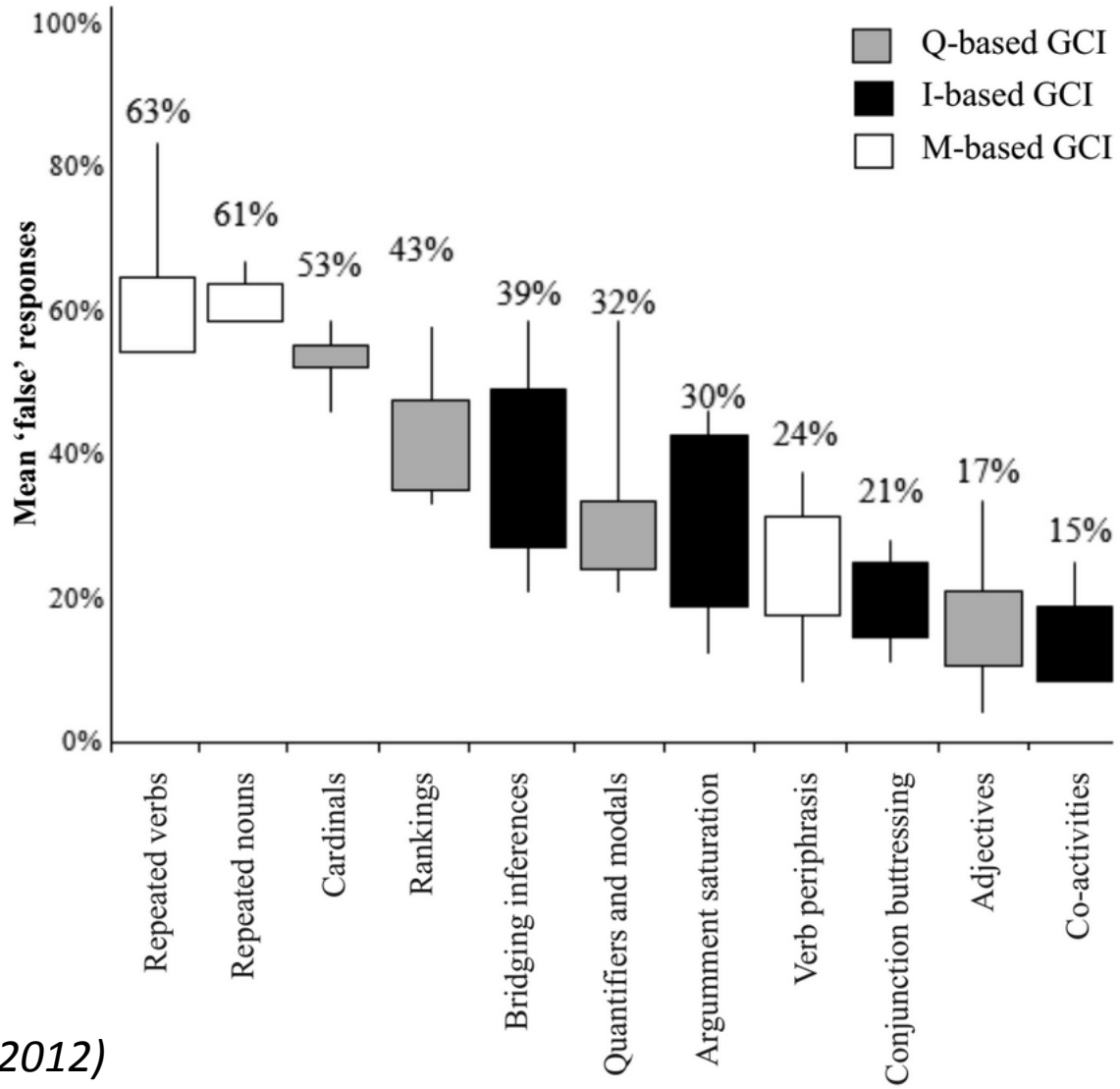
van Tiel et al. (2014)



(*SOME* in a *MOST* context)

Zhan, Jiang, Politzer-Ahles, & Zhou (in prep.)



Doran et al. (2012)

- Implicitures
  - *It's raining*

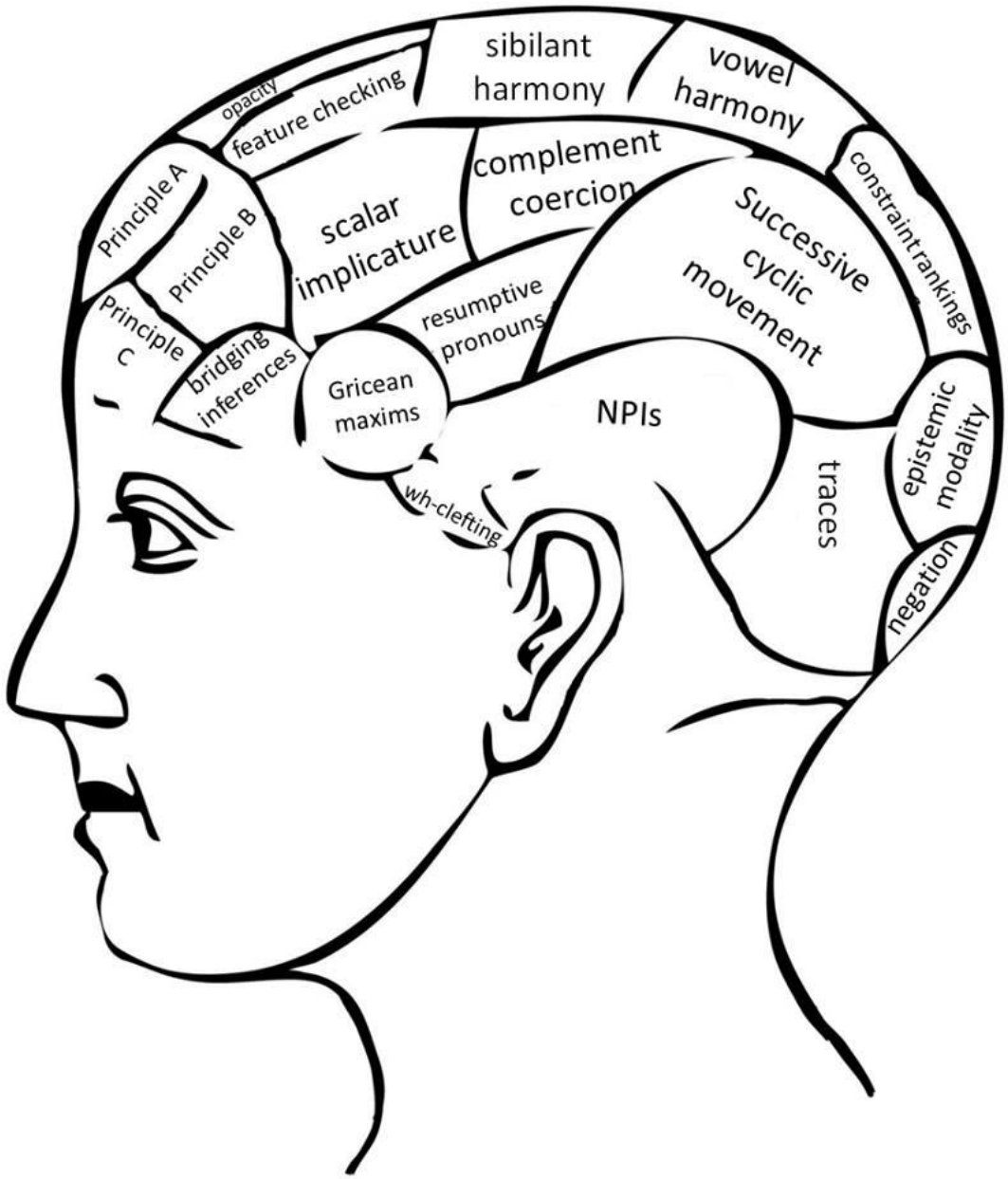
    +> *It's raining here*

- Presuppositions
  - *My brother isn't tall*

    → I have a brother

- Conventional implicatures
  - *He's old, but strong*

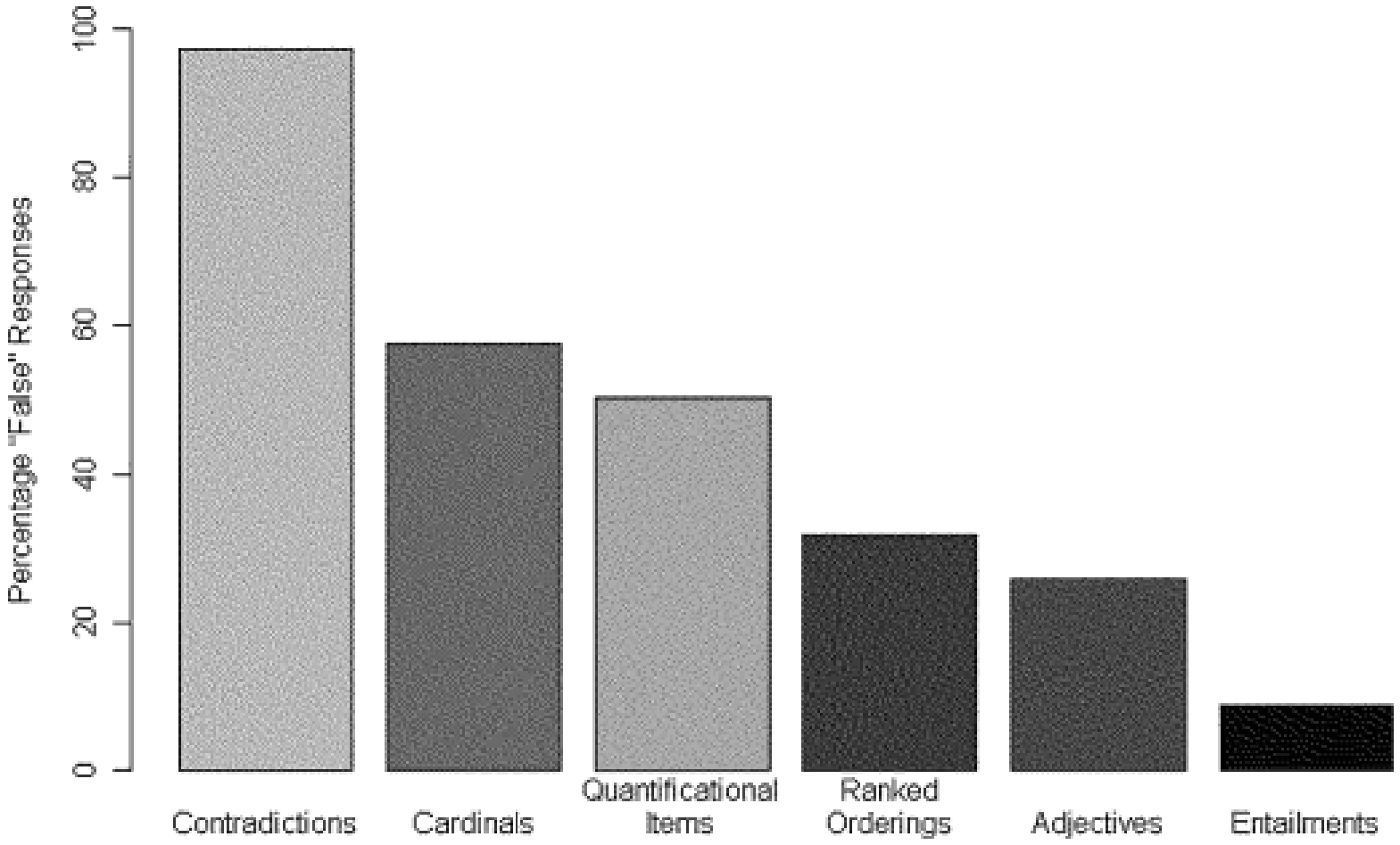
    +> there is a contrast between the properties "old" and "strong"


sibilant harmony
vowel harmony
opacity
feature checking
Principle A
Principle B
Principle C
scalar implicature
complement coercion
Successive cyclic movement
constraint rankings
resumptive pronouns
bridging inferences
Gricean maxims
NPIs
epistemic modality
traces
wh-clefting
negation

Thank you!

Maybe I can answer some of your questions...

R. Doran et al. / International Review of Pragmatics 1 (2009) 211–248



- *You found all of them → You found some of them*
- *You didn't find all of them ← You didn't find any of them*

- *brilliant → smart*
- *not brilliant ← not smart*

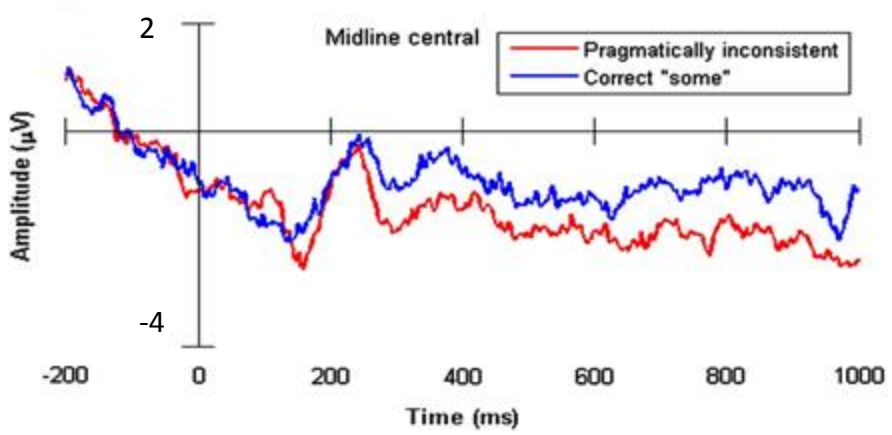
Scalar inferences (e.g. *Some +> not all*)

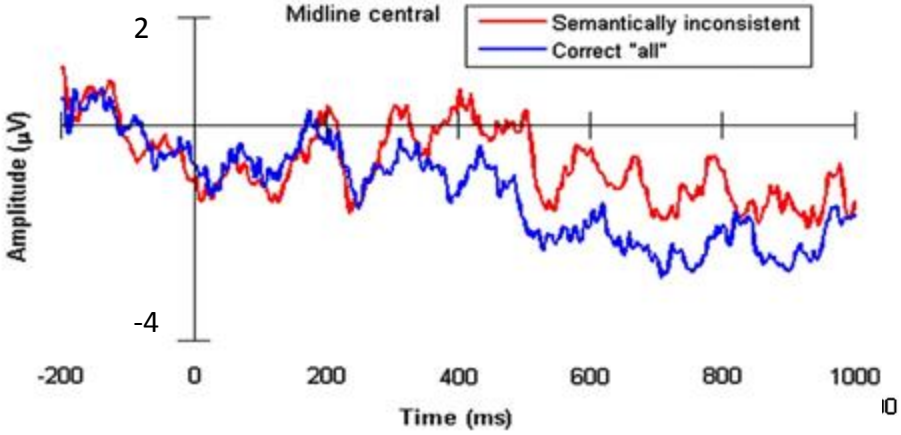
- Why didn't the speaker utter a stronger alternative ("all")?
- Assuming the speaker is cooperative, she must not believe the alternative is true
- Assuming the speaker has an opinion one way or another, she must believe the alternative is false

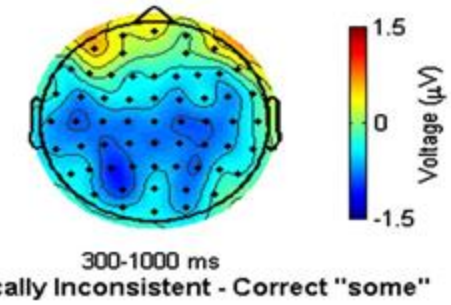
Ad-hoc inferences (e.g. *The fork +> the fork and not the spoon)*

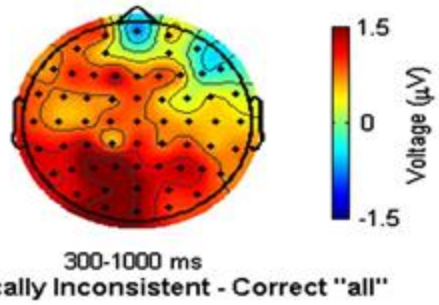
- Why didn't the speaker utter a stronger alternative ("the fork and the spoon")?
- Assuming the speaker is cooperative, she must not believe the alternative is true
- Assuming the speaker has an opinion one way or another, she must believe the alternative is false

- Bob: “Some of the students passed”
  - Weak implicature: Bob doesn’t believe that *some of the students passed*
  - Strong implicature: Bob believes that *not all of the students passed*









300-1000 ms
Pragmatically inconsistent – Correct "some"

300-1000 ms
Semantically inconsistent – Correct "all"

Auditory experiment: Sustained broad negativity, only for pragmatically inconsistent sentences

Stimuli (2)

- “Will all these books fit inside the bookbag?”
- “Is this too many books to fit in the bookbag?”

Stimuli (3)

	“definitely not”	“maybe”	“definitely”
DEFINITELY NOT	30	40	20
MAYBE	30	40	30
DEFINITELY	20	40	30

90 additional fillers: yes/no questions using the same pictures