The case of the inconsistent implicature

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Variability

between participants

in

(scalar) **implicature**

Example: Bott and Noveck (2004)

- Early and much-cited experimental pragmatics paper
  - (Well, early as "experimental pragmatics" goes, but partially a replication of Rips (1975) with a different theoretical focus)
- Dealing with use of *some* in sentences like *Some elephants are mammals*
  - Investigating Levinson's (2000) claim about default inferences
  - Adopted his assumption that SIs would be somehow **costly** unless obtained by default inference
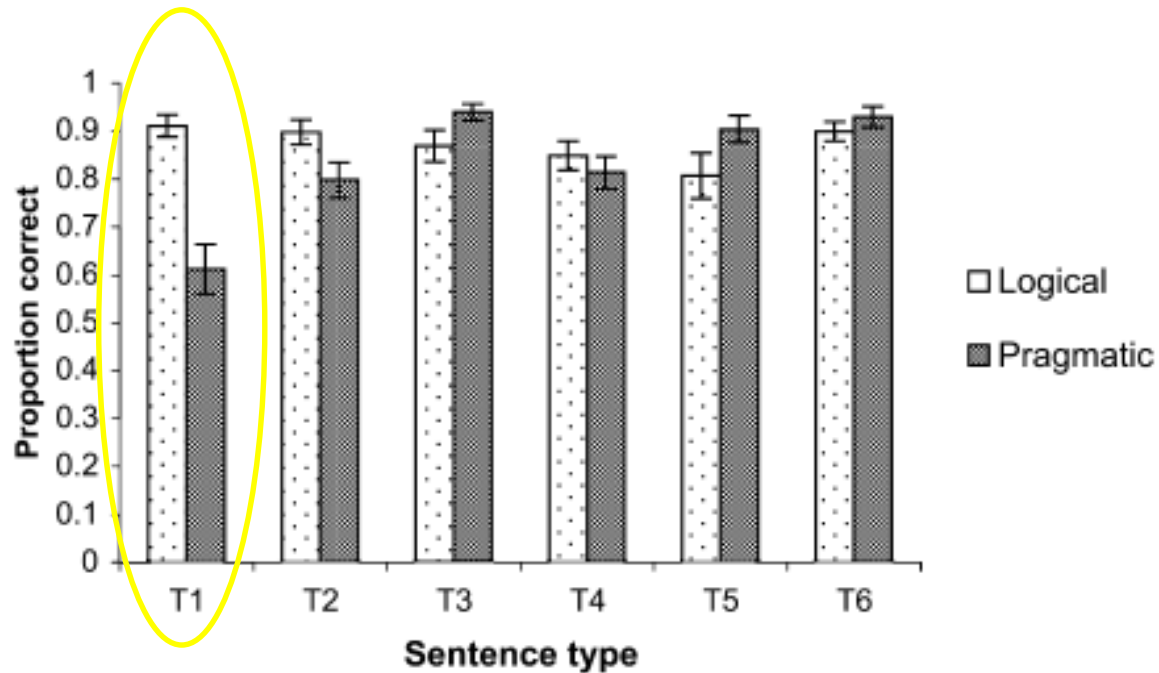
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- Dealing with use of *some* in sentences like *Some elephants are mammals*
  - Truth-value judgments elicited for underinformative sentences
  - Predictions:
    - Under contextual (RT) account: acceptances faster than rejections, ∵ the latter involve SIs being generated (at a cost)
    - Under default account: rejections faster than acceptances, ∵ latter require cancellation of default inference (at a cost)

Example: Bott and Noveck (2004)

- Two groups of adult participants trained differently:
    - "Logical" – trained to treat *some* as "some and possibly all"
    - "Pragmatic" – trained to treat *some* as "some but not all"
    - Comparing response latencies between the two groups
- However, the two groups then exhibited unexpected differences in their behaviour

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- However, the two groups then exhibited unexpected differences in their behaviour
  - About 40% of the "pragmatic" group broke their programming…
  - Of those that responded "correctly", there was a clear pattern, which corresponded with the contextual prediction

Example: Bott and Noveck (2004)
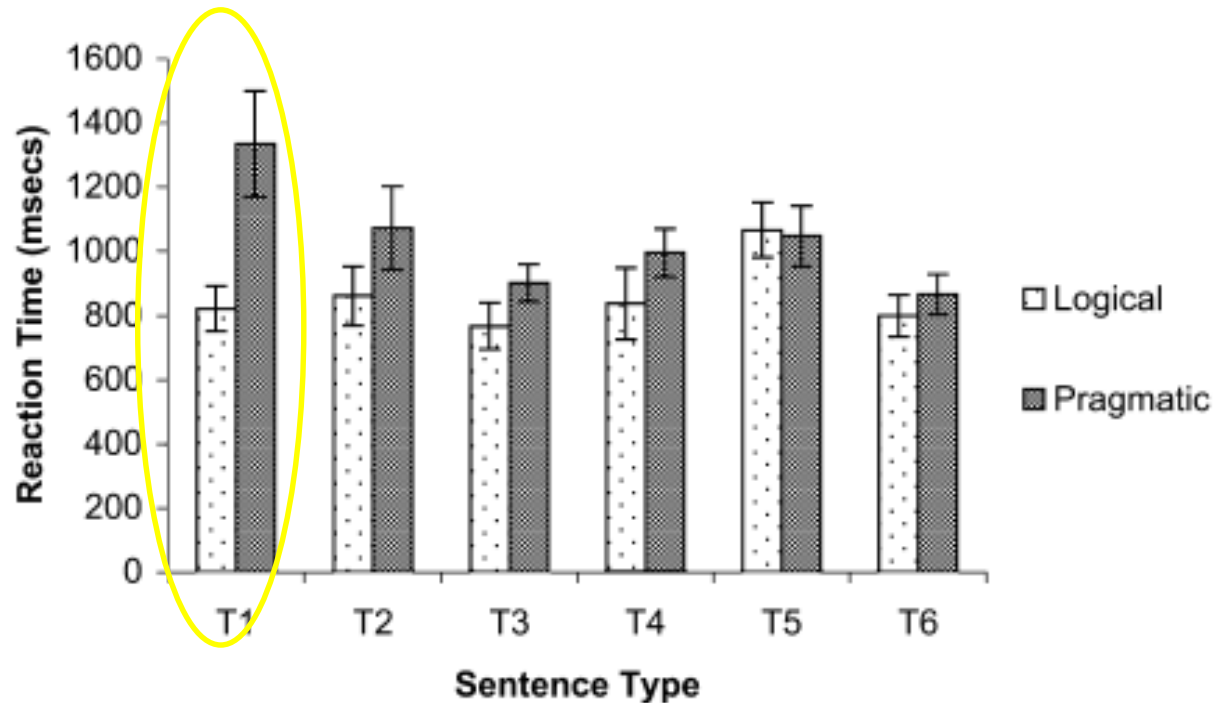
Issues

- Narrowly, do the results justify the interpretation placed on them in this experiment?
  - Could the slowdown in responses be because the **decision** is more difficult to make in the pragmatic case, like in psychophysics?
- More broadly, what are the participants doing, and how can we explain that?
  - Pragmatically competent adults should have no problem drawing these inferences: what's going wrong?
  - Also applies to Noveck and Posada (2003), Guasti et al. (2005), Pouscoulous et al. (2007), and so on...
  - Not usually a focus of enquiry, but still *there*

"Einstein's Razor" (1933)

"Everything should be made
as simple as possible,
but no simpler"

Or, to quote more accurately:

"It can scarcely be denied that the supreme goal of all theory is to make the irreducible basic elements as simple and as few as possible without having to surrender the accurate representation of a single datum of experience"

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- More broadly, what are the participants doing, and how can we explain that?
  - We seem to have data for which we lack an "adequate representation"
  - In fact, we've sometimes assumed that participants are simply failing in some way, despite the implausibility of this claim
  - Then we've interpreted the data in the light of this assumption

"Embedded implicatures"

- In declarative contexts, theoretical disagreement about the course of implicature generation, but not the outcome

- In embedded contexts, disagreement about both
  - Contextual accounts predict (general) non-availability of these readings

  All of the students read some of the books

  +> *All of the students read some, but not all, of the books*?

  - On a Gricean account, this shouldn't be valid, in effect because the candidate inference isn't the negation of a stronger alternative
  - On a default account, it should be, because *some* can be enriched in situ, and there's nothing wrong with the resulting interpretation
  - Consequently, variability is a theory-critical issue here

- Investigation of embedded "UBCs"
  - Inference judgment task
    - *Some* is almost never interpreted as *not all* when under the scope of *must,* but is sometimes interpreted that way under *all, wants* or *thinks*

|	target sentence	candidate inference
∅	Fred heard some of the Verdi operas.	He didn't hear all of them.
all	All students heard some of the Verdi operas.	None of the students heard them all.
must	Fred has to hear some of the Verdi operas.	He isn't allowed to hear all of them.
think	Betty thinks Fred heard some of the Verdi operas.	She thinks he didn't hear all of them.
want	Betty wants Fred to hear some of the Verdi operas.	She wants him not to hear all of them.

Table 1: Sample sentences used in Experiments 1a-b.

	∅	all	must	think	want
Experiment 1a	.93	.27	.03	.50	–
Experiment 1b	.94	–	–	.65	.32

Table 2: Rates of positive responses observed in Experiments 1a-b.

Geurts and Pouscoulous (2009)

- Investigation of embedded "UBCs"
  - Inference judgment task
    - *Some* is almost never interpreted as *not all* when under the scope of *must*, but is sometimes interpreted that way under *all*, *wants* or *thinks*
  - Truth-value judgment task
    - Pictures violating the embedded UBC are still judged true
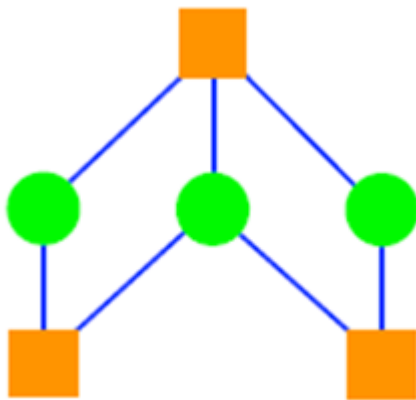
All the squares are connected to some of the circles

Exactly two of the squares are connected to some of the circles

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- Evidence that these enrichments are not typically available

Chemla and Spector (2011)

- Counter that participants nevertheless *prefer* pictures which satisfy embedded UBCs
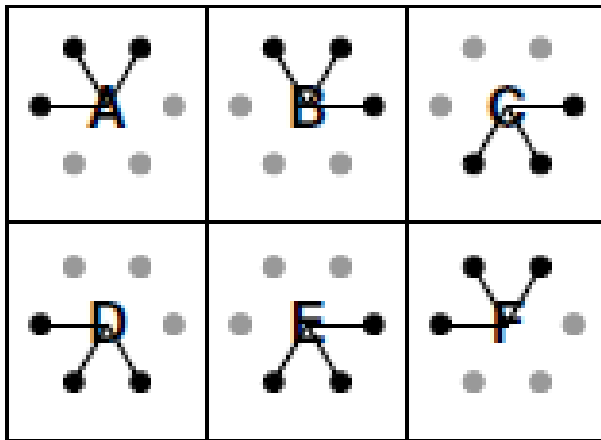   - Truth(y) judgment for sentences as descriptions of pictures

Every letter is connected with some of its circles

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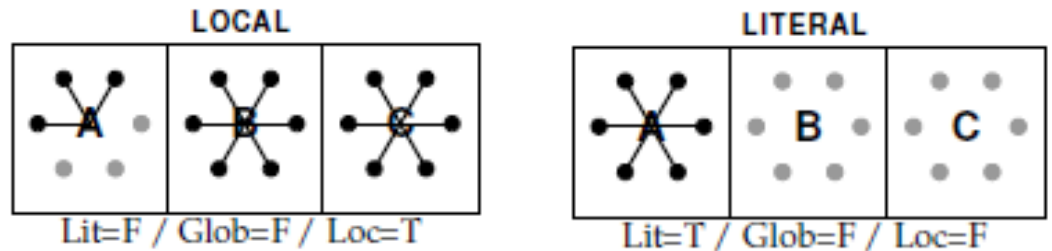 - Truth(y) judgment for sentences as descriptions of pictures
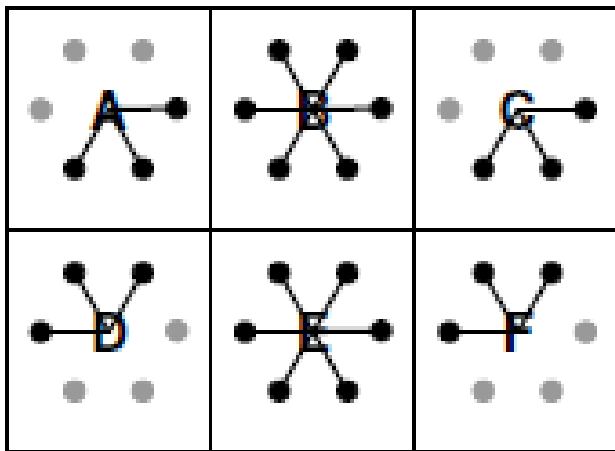
Every letter is connected with some of its circles

Chemla and Spector (2011)

- Can even get a preference for an "embedded SI" satisfier over a literally true (but pragmatically odd) condition

There is exactly one letter connected with some of its circles

LOCAL

Lit=F / Glob=F / Loc=T

LITERAL

Lit=T / Glob=F / Loc=F

'Some'

FALSE	(6.7%)	
LOCAL	(73%)	
LITERAL	(37%)	
ALL	(98%)	

Again, inconsistency, either way…

- On the default (or grammatical) account, it's surprising that the embedded enrichments are so often absent

- On the contextual account, it's surprising that some effect of UBC is so often present

- Problem, and opportunity
    - Interesting data to try to explain…
    - …so I'm not going to…
    - …but I would like to discuss it, focusing particularly on "pragmatic tolerance" and what might underpin it

Why accept underinformative *some*?

- Or, more specifically, why do a proportion of participants tolerate underinformative statements with some, like *Some elephants are mammals*?

- Could be inability to draw the implicature
  - But this would be surprising in cognitively normal adults

- Perhaps participants are not responding based on the SI
  - "Pragmatic tolerance" – Katsos and Bishop (2011)

Katsos and Bishop (2011)

- Observation: people seem unwilling to render true/false responses to underinformative statements like that
    - "It's technically true", "Neither true nor false", …
- K&B test children aged 5-6 on sentences of this type
    - In a binary judgment task, they judge the sentences good
        - *Looks like* absence of SI
    - However, in a ternary judgment task, upwards of 85% of participants assign the middle rating to such descriptions
    - Hence, sensitive to underinformativeness, but this violation is not important enough to justify rejecting the utterance
    - Perhaps adults evaluate this differently, up to a point…

Pragmatic tolerance and context-awareness

- Why would some adults not arrive at this end state of "pragmatic intolerance"?
  - Well, implicature requires numerous licensing conditions
  - We could easily imagine contexts in which these are not met
  - Maybe that's what (some) adult participants are doing in our experiments
- As experimenters, we're at the mercy of events
  - We tend not to furnish rich context, in order to preserve some measure of generalizability
  - But it's occasionally been argued that participants will tend to imagine a context of their own (e.g. Breheny et al. 2006)
  - We choose not to control this

Context-awareness and embedded implicature

- By inventing supporting assumptions, might be able to restore (some) SIs under a purely contextual account
    - Example: *Betty thinks that Fred heard some of the Verdi operas*
    - Obtain the embedded UBC on purely Gricean grounds if we further assume that the speaker knows that Betty has an opinion as to whether Fred heard all the Verdi operas (might be reasonable)
    - Similarly for *All the students read Hamlet or King Lear*

Variability between SI triggers

- Geurts and colleagues demonstrate wide variability among SI triggers as to the robustness of the implicature
  - *<some, all>* very strong (rather atypical)
  - *<like, love>* less strong
  - *<hot, boiling>* weak
- Possible that robust scales are those in which the terms are usually intersubstitutable "salva felicitate"
  - That is, it's hard to imagine circumstances under which one term would be relevant and the other not
  - Whereas, sometimes, it might be quite easy to conjure up such circumstances (and hence rule out the implicature)
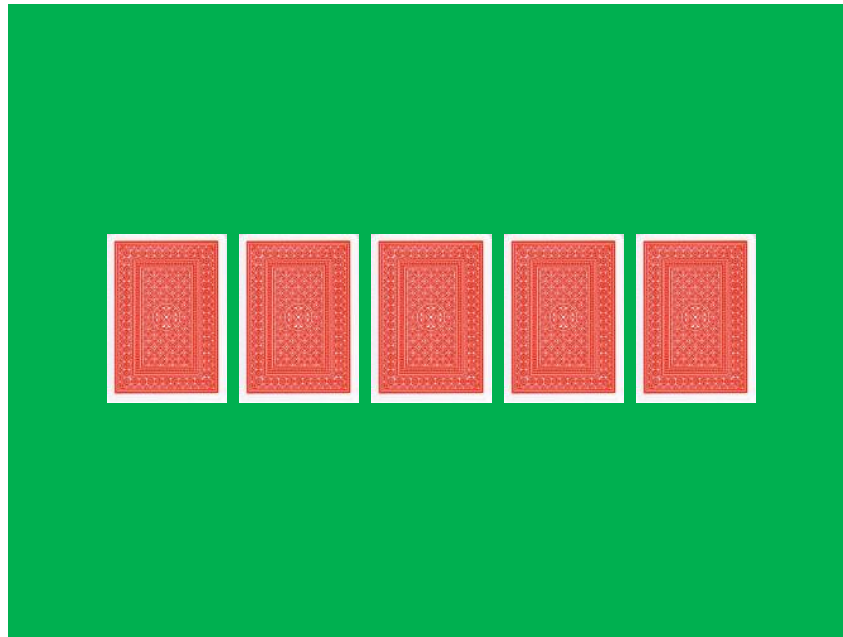
Overview

- Apparent SI failure in these tasks might be due to
  - Actual failure, due to a lack of ability
  - Pragmatic tolerance
  - Excess of pragmatic awareness
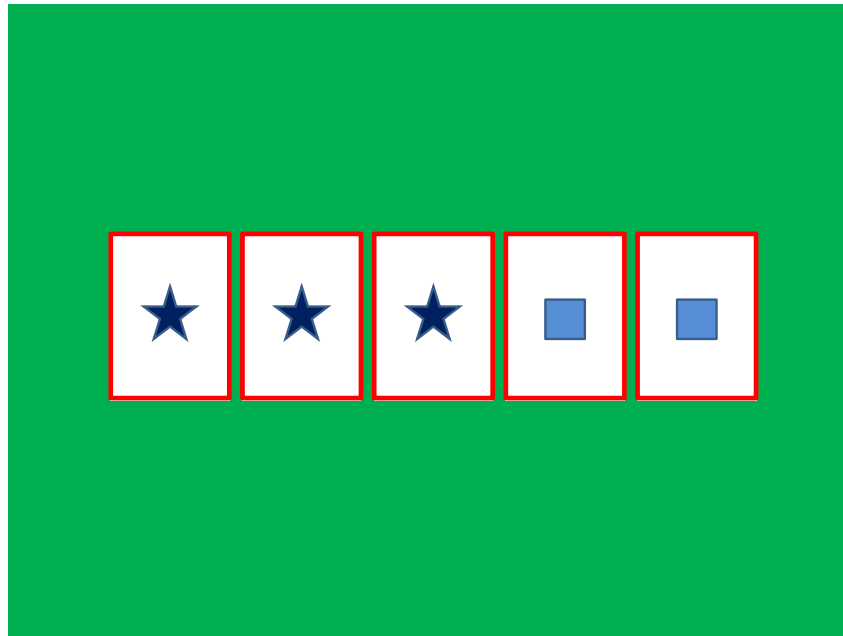 - Error
  - or some combination of all these factors

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  - Ongoing work with Kyriakos Antoniou and Napoleon Katsos
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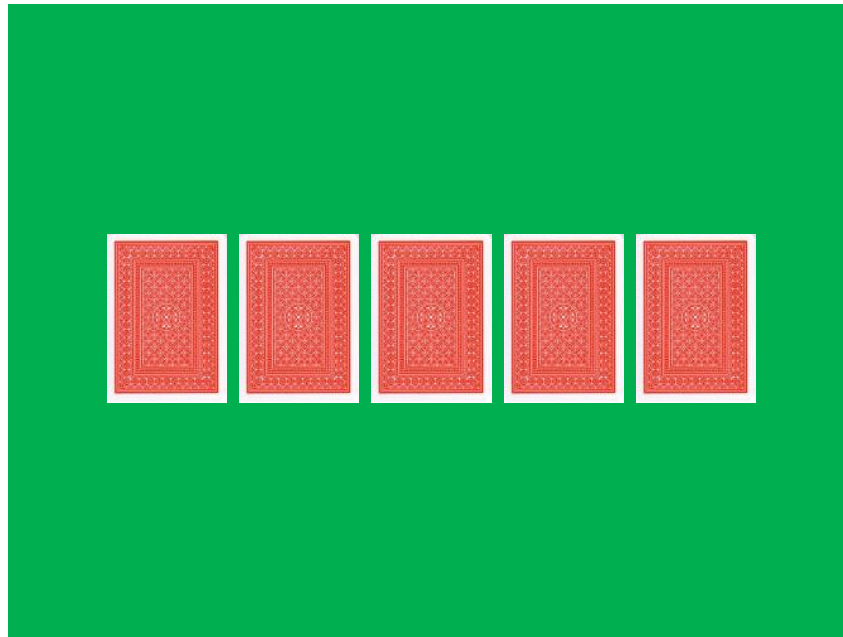 - Simple SI task and a battery of other test instruments

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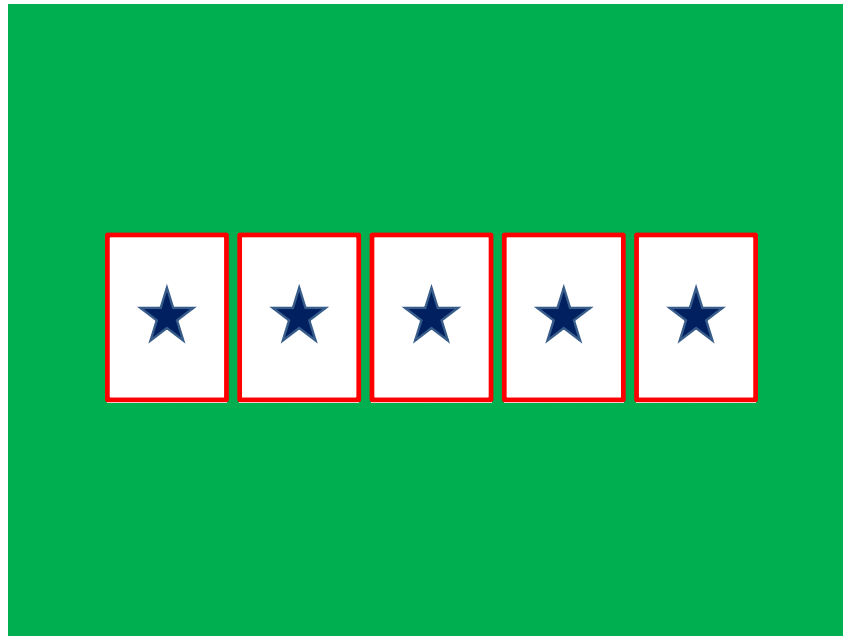   - Simple SI task and a battery of other test instruments

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  - Simple SI task and a battery of other test instruments
    - Big Five inventory, Honesty/Authenticity/Integrity scale, Autism Spectrum Quotient
    - Simon task, Stroop task, Number-Letter task
    - Backward digit span task, WASI matrix reasoning test
    - Sentence repetition task, Reading Span task

Imaginable hypotheses

- Exploratory study, but you could adopt various hypotheses
  - Pragmatic tolerance might be linked to autistic symptomatology
  - Pedanticism might be associated with intolerance for underinformativeness
  - Low working memory, especially verbal, might contribute to difficulties in computing implicatures
  - Highly cognitively flexible participants might be able to suppress implicature by appeal to licensing contexts, etc. etc.

Results

- Pretty minimal!
  - Admittedly from a modest-sized sample (n=63), so should be interpreted with caution either way...
  - Very little effect of any personality traits
  - Slight effect of age (older participants more tolerant)
  - Slight effect of working memory (higher WM participants less tolerant)
  - But no smoking gun, and very little support for any of the hypotheses I sketched out just now

Prospects?

- Outlook remains interesting in some important ways
- Looks as though these pragmatic patterns might not be reducible to well-studied non-linguistic factors (such as personality, cognitive ability, etc.)
  - (Unless we just haven't found the appropriate predictor yet)
- Suggests that if we can find out what's going on, it might even tell us something new about general cognition

Thank you!

References

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