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# 1 Experiments with Declaratives and Negation

## Summary

- We don't see the correlation between non-at-issueness measures and projection measures here that are predicted by the GPP
- This seems to be due to problems with the intended at-issueness diagnostics: They confound at-issueness with speaker commitments, which does make them sensitive to projection as well

## 1.1 2n—Negation embedding, yes, that's true+complement diagnostic (+ acceptability rating)

- (1)
  - a. **Christopher:** Cole didn't discover that Julian dances salsa.
  - b. **Sandy:** Yes, that's true, Julian dances salsa.
- yes, that's true+complement diagnostic for at-issueness (?):
  - Tests whether you can agree with the previous assertion and assert the complement
  - so, in a sense this is a diagnostic of projection as well
- Certain-that diagnostic for projection: Tests whether participant assumes that speaker is committed to complement
- Projection does not correlate with the (intended) non-at-issueness measures

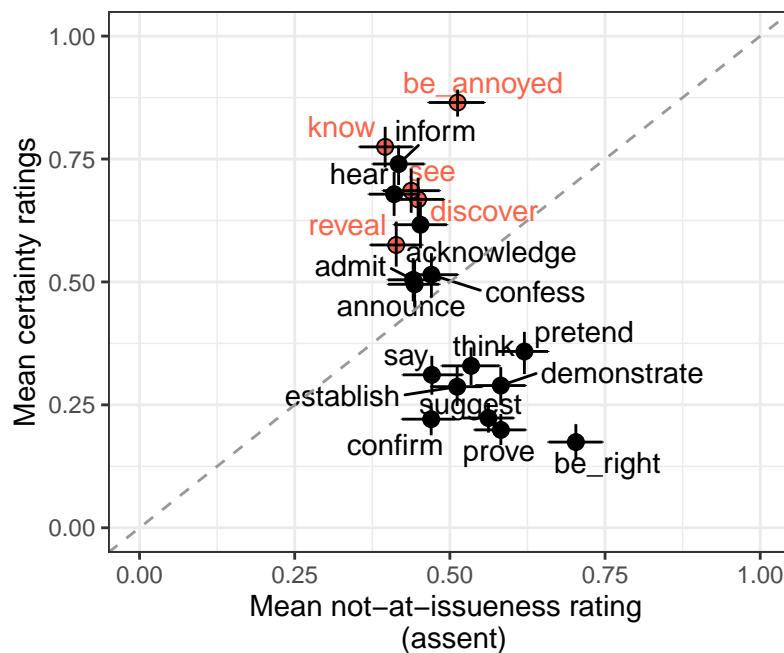


Figure 1: Mean not-at-issueness ratings vs mean certainty ratings by predicate, Exp. 2n

- In fact, it looks like there might be an inverse relationship
- I would expect that projection-measure correlates better with the opposite (i.e. the intended measure of at-issueness)
- For declaratives, a different at-issueness diagnostic may be needed

## 1.2 How does the correlation for 2n look for projection vs. the positive responses to the assent-diagnostic?

Plot for correlation between projectivity-measure and high acceptability ratings for assent w/ assertion of complement.

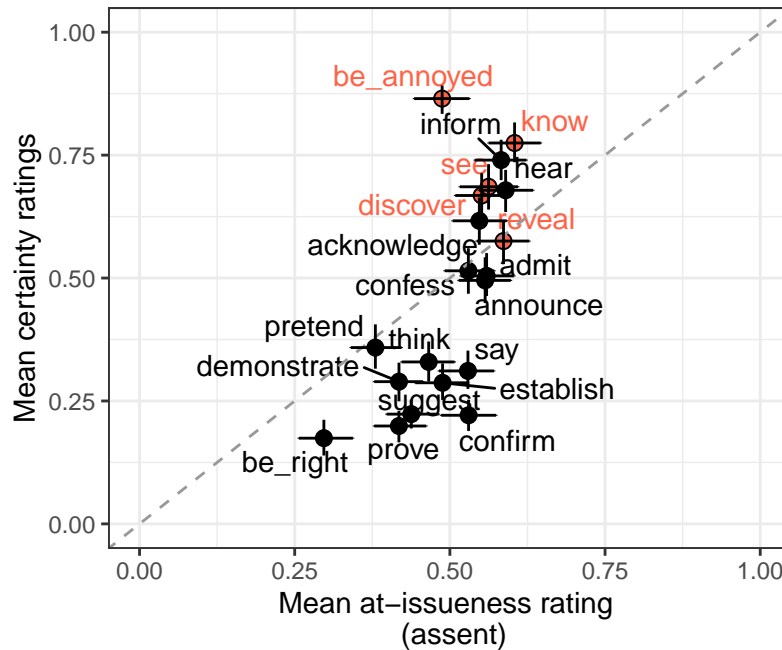


Figure 2: Mean at-issueness ratings vs mean certainty ratings by predicate, Exp. 2n

- This looks more like a non-linear correlation

## 1.3 3n—Negation embedding, yes, that's true + negation of main clause (+ acceptability rating)

- (2) a. **Christopher:** Cole didn't discover that Julian dances salsa.  
b. **Sandy:** Yes, that's true, but Cole discovered it.

- yes, that's true+negation of main clause diagnostic for at-issueness:
  - Tests whether you can agree with the previous assertion and assert the negation of the main clause
  - agreement with main point of previous utterance
  - If the main point was the complement, and the first speaker is committed to truth of the complement, then assent should be possible while rejecting the main clause.
  - This addresses at-issueness of the complement.
  - But potentially also confounds speaker commitment to complement (i.e. projection) with at-issueness.
  - This is assuming that assent signals that the second speaker takes on (some of) the commitments of the first speaker.
  - Based on this assumption, we can also assume the acceptability ratings to be relatively low throughout.
- Certain-that diagnostic for projection: Tests whether participant assumes that speaker is committed to complement
- Does projection correlate with the (intended) non-at-issueness measures? If there is a confound, we would again expect something more to the opposite effect. (see Figure 3)

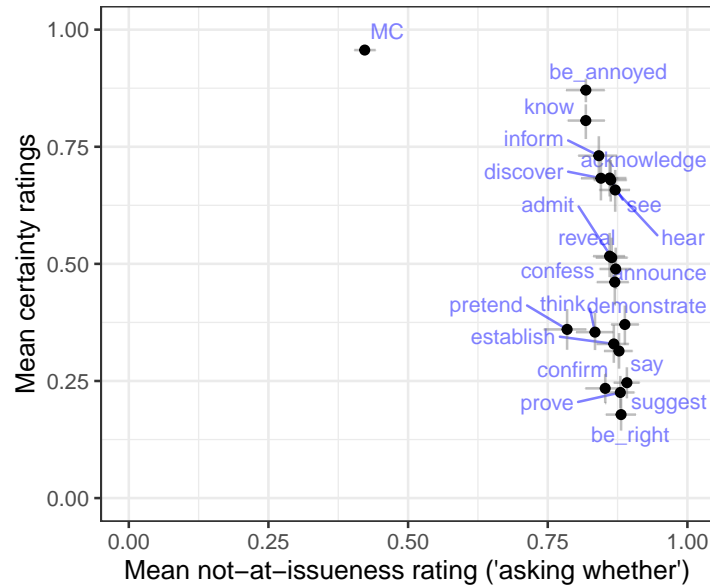


Figure 3: Mean not-at-issueness ratings vs mean certainty ratings by predicate, Exp. 3n

#### 1.4 1n—Negation embedding, are you sure?, assent + assertion of complement + Q-A judgment

- (3) a. **Christopher:** Cole didn't discover that Julian dances salsa.  
 b. **Sandy:** Are you sure?  
 c. **Christopher:** Yes, I'm sure that Julian dances Salsa.

- This diagnostic also conflates non-at-issueness with projection: Only if Christopher is committed to truth of the complement can they respond in this way
- Here, also we don't see the correlation come out (Figure 4)

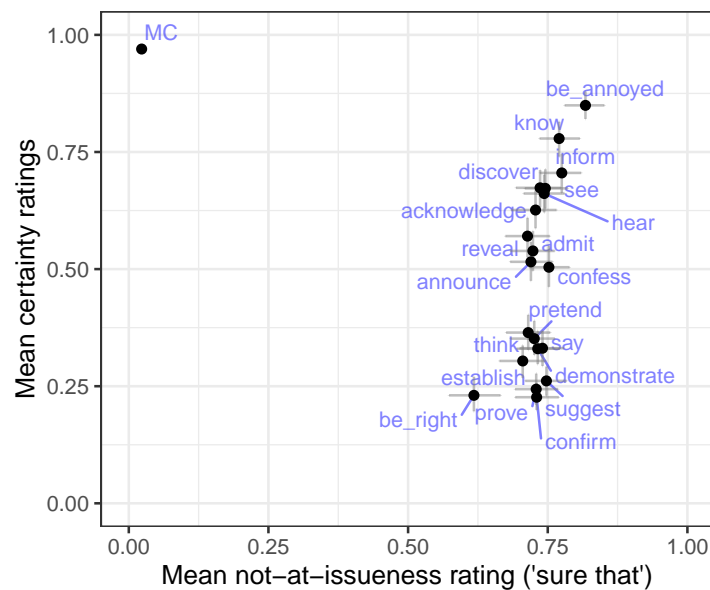


Figure 4: Mean at-issueness ratings vs mean certainty ratings by predicate, Exp. 1n

## 1.5 A conclusion about at-issueness diagnostics

- A diagnostic of at-issueness should not interact with speaker commitment
- Problem with negation: If the complement is at issue, it will be targeted by entailment-cancelling operators
- On the other hand, if the complement is not at issue, it is predicted to project
- A diagnostic should target the question of whether the first utterance addresses the question  $\{c, \neg c\}$ , while leaving open how exactly the question is resolved
- Here is one idea:
- Asking what it was about without commitment:
  - (4) a. **Christopher:** Cole didn't discover that Julian dances salsa.
  - b. **Sandy:** Oh right, Mary told me that as well.
  - Forced Choice:** What did Mary talk to Sandy about?
  - (i) Whether Julian dances salsa.
  - (ii) Whether Cole discovered that Julian dances salsa.
- Question-answer based: Can the declarative address a question about the complement?
  - (5) a. **Sandy:** Does Julian dance salsa?
  - b. **Christopher:** Cole didn't discover that Julian dances salsa.
  - Q-A judgment:** Did Christopher answer Sandy's question?
- Anaphora-based:
  - (6) a. **Christopher:** Cole didn't discover that Julian dances salsa.
  - b. **Sandy:** That would be quite surprising.
  - Forced Choice:** What would Sandy find surprising?
  - (i) Julian dancing salsa.
  - (ii) Cole discovering that Julian dances salsa.

These tests separate at-issueness diagnostics from commitment, as well as the question of whether or not the second speaker (dis)agrees with the first.

- This is important, especially under negation, because if we expect that at-issueness correlates with non-projection, we expect the complement to be targeted by negation, and therefore counterfactual.
- Separating at-issueness and commitment of the complement I think that we can expect a correlation between non-at-issueness and projection again.
- (7) **Context:** Cole is a child that is being picked up from daycare
  - a. **Parent:** What did Cole do today?
  - b. **Caretaker:** Cole didn't see that Julian danced salsa.
  - ⇒ Probable inference that Julian danced salsa
- (8) **Context:** Julian is a child that is being picked up from daycare
  - a. **Parent:** What did Julian do today?
  - b. **Caretaker:** Cole didn't see that Julian danced salsa.
  - ⇒ Probable inference that Julian did not dance salsa (?)
  - ⇒ Additional evidential inference Cole is a reliable source on whether Julian danced Salsa

- That should be the case, at least for certain predicates, namely veridical ones (see discussion below)
- Some open questions:
  - The experiment assumes that the probability of complement at-issueness is influenced by the lexical embedding. That seems to be the case
  - However, there are other factors that can influence at-issueness
    - \* **Discourse context (QUD)**: An utterance is more likely to be about a topic that has already been brought up/a question that has been raised
    - \* **Epistemic context (common ground)**: An utterance is more likely to be about an issue that hasn't been settled

## 2 Experiments with question embedding

### Summary

- For questions, the correlation comes out more clearly
- This suggests that the at-issueness diagnostics for questions work better.
  - This seems clear for asking-whether diagnostic
  - Although we questioned this last time, I think that it applies to yes+*c* diagnostic
  - It doesn't work for yes but not *c'* diagnostic
- There are some lexical exceptions wrt the correlation
- The exceptions are:
  - Mostly non-veridical predicates (*say, suggest, think, pretend*)
    - \* This suggests lexical contribution of the verb:
    - \* Only if the verb is associated with an inference about the truth of the complement, that inference can project
  - Maybe some veridical assertives(?) (*prove, establish, demonstrate, confirm*)
    - \* c.f. Anand & Hacquard 2014 on epistemic vs assertive attitudes: veridical epistemics are factive, while veridical assertives are non-presuppositional
    - \* Interestingly, though, other veridical assertives behave differently (*inform, acknowledge, confess, admit*)
    - \* Not sure if the latter group actually is characterized as in the same way in A&H: do they take (non-agentive/non-intentional) repository of information subjects (e.g. #/? *The test results informed us/acknowledged/confessed/admitted that Mary is free of contagious diseases.* vs. *The test results proved/established/demonstrated/confirmed that Mary is free of contagious diseases.*)
    - \* These two groups are discussed in A&H as apparent counterexamples
    - \* Djärv (2019): analysis of non-projection as involving evidential interpretations

## 2.1 1q—Question embedding, asking-whether diagnostic

- (9) a. **Christopher:** Did Cole discover that Julian dances salsa?  
 b. **Question-based at-issueness diagnostic:** Is Christopher asking whether Julian dances salsa?
- Asking-whether diagnostic for at-issueness:
    - Tests whether the utterance is ‘about’ the truth of the complement
    - Question-based at-issueness diagnostic
    - What is the main point of the utterance?
  - Certain-that diagnostic for projection: Tests whether participant assumes that speaker is committed to complement
  - Not-at-issueness correlates with projection (Figure 5)
    - but only for veridical predicates
    - the lexical exceptions are non-veridical predicates
    - Updated GPP (?): given an inference is associated with a predicate, it will project to the extent that it is not at issue

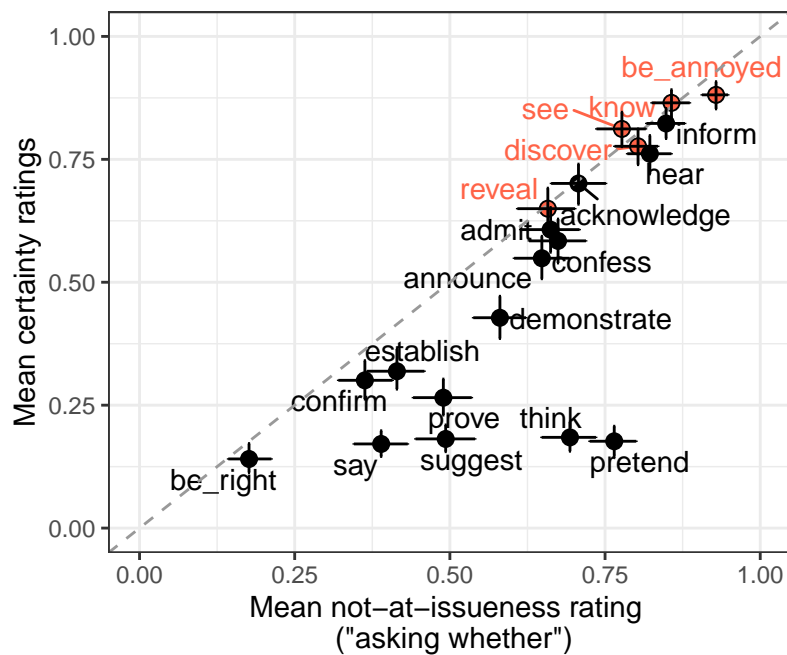


Figure 5: Mean not-at-issueness ratings vs mean certainty ratings by predicate, Exp. 1q

## 2.2 2q—Question embedding, yes+complement diagnostic (+ acceptability rating)

- (10) a. **Christopher:** Did Cole discover that Julian dances salsa?  
b. **Sandy:** Yes, Julian dances salsa.

- yes+c diagnostic for at-issueness (acceptability rating):
  - Tests whether an affirmative response to the question can be accompanied with an assertion of the complement (there is an intuitive sense in which they should be ‘about’ the same thing)
  - Therefore, this can also be understood as a diagnostic of the main point of the question
- Certain-that diagnostic for projection: Tests whether participant assumes that speaker is committed to complement
- Not-at-issueness correlates with projection (Figure 6)
  - Similar pattern of lexical exceptions
  - They are more spaced out here

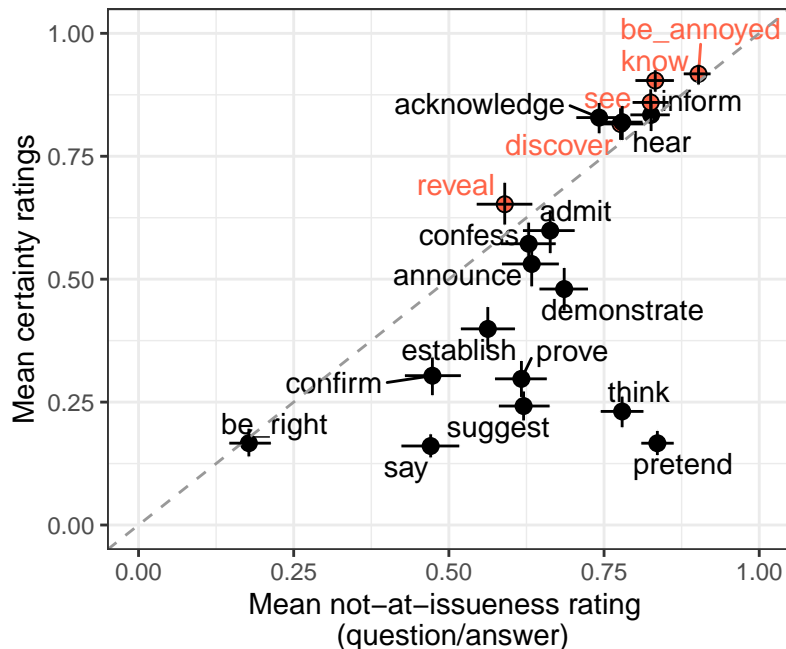


Figure 6: Mean not-at-issueness ratings vs mean certainty ratings by predicate, Exp. 2q

## 2.3 3q—Question embedding, yes but not $c'$ (+ acceptability rating)

- (11) a. **Christopher:** Did Cole discover that Julian dances salsa?  
b. **Sandy:** Yes, but Cole didn't discover that.

- yes but not  $c'$  diagnostic for at-issueness (acceptability rating):
  - Tests whether an affirmative response to the question can be accompanied with a denial of the main clause
  - Expectation: If the question is about the complement, we might be able to affirm the complement while denying the main clause
  - This is, again, based on the assumption that the complement and main clause are interpreted independent of each other



- However, if Djärv (2019) is right that projective interpretations are interpreted as evidentials, it is expected that we cannot affirm the complement while rejecting the main clause, in cases where there is projection.
- In fact all ratings for this test are quite low overall.
- Certain-that diagnostic for projection: Tests whether participant assumes that speaker is committed to complement
- (Intended) not-at-issueness measure does not correlate with projection, see [Figure 7](#)

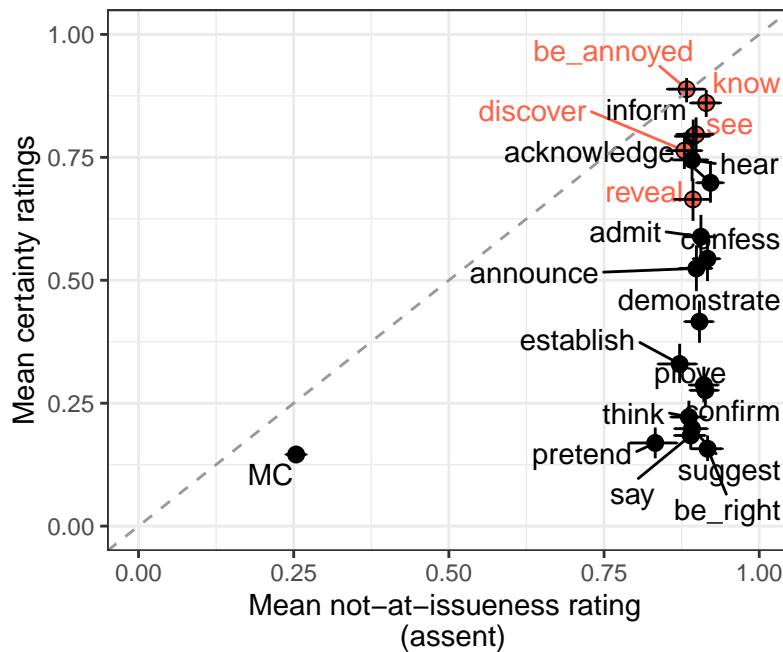


Figure 7: Mean not-at-issueness ratings vs mean certainty ratings by predicate, Exp. 3q

### 3 Experiments with modals

#### 3.1 1m—Modal embedding (perhaps), are you sure?, assent + assertion of complement + Q-A judgment

- (12)
- Christopher:** Perhaps Cole discovered that Julian dances salsa.
  - Sandy:** Are you sure?
  - Christopher:** Yes, I'm sure that Julian dances Salsa.
- Like with negation above, this test clearly conflates at-issueness and projection: Only of Christopher is committed to *c*, can they respond in this way
  - Correlation does not exactly come out see [Figure 8](#)
    - However, more so than for negation
    - Interestingly, the lexical exceptions are similar here: *prove*, *say*, *suggest*, *think*, *pretend*

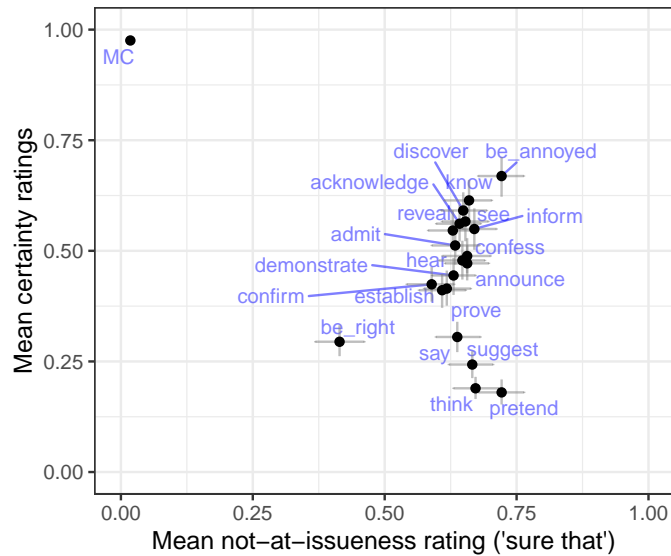


Figure 8: Mean not-at-issueness ratings vs mean certainty ratings by predicate, Exp. 1m

### 3.2 2m—Modal embedding (perhaps) yes, that's true+complement diagnostic (+ acceptability rating)

- (13) a. **Christopher:** Perhaps Cole discovered that Julian dances salsa.  
b. **Sandy:** Yes, that's true, Julian dances salsa.

- Same test as above: Intended at-issueness measure also tests whether agreeing is possible while asserting the complement: confound with commitment
- Overall acceptability ratings are higher for this test compared to 1m
- But the overall pattern in correlation with projection-measure is similar **Figure 9**
  - More of a correlation compared to negation experiments
  - Again same predicates outside of the main cluster: *prove*, *say*, *suggest*, *think*, *pretend*

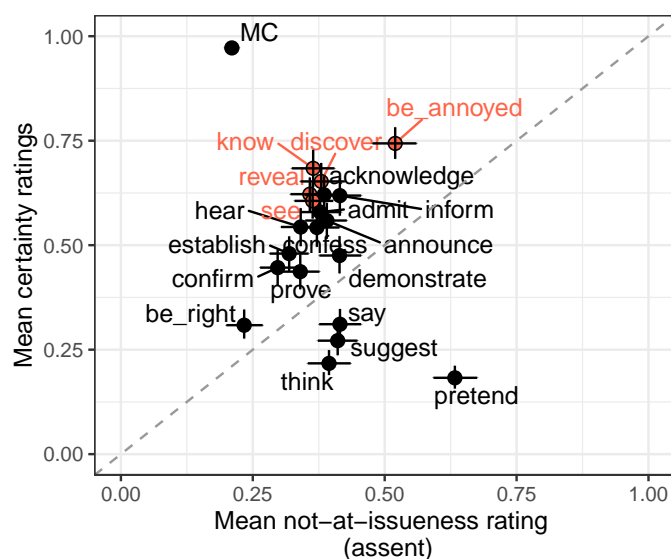


Figure 9: Mean not-at-issueness ratings vs mean certainty ratings by predicate, Exp. 2m

## 3.3 3m—Modal embedding (perhaps), yes, that's true + negation of main clause (+ acceptability rating)

- (14) a. Christopher: Perhaps Cole discovered that Julian dances salsa.  
 b. Sandy: Yes, that's true, but Cole didn't discover it.

- Similar pattern to other modal experiments above

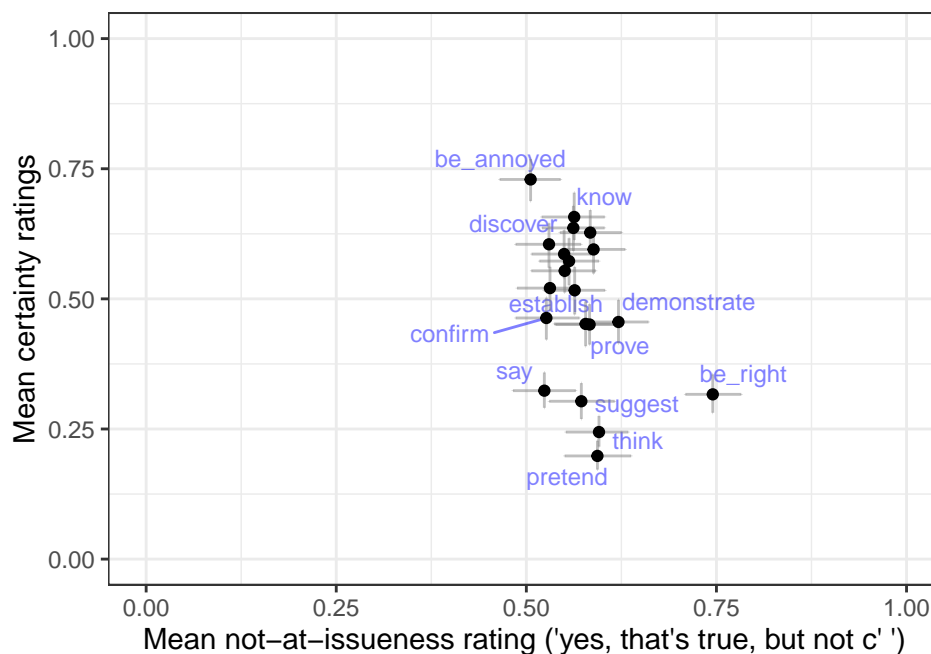


Figure 10: Mean not-at-issueness ratings vs mean certainty ratings by predicate, Exp. 3m

## 4 Experiments with Conditionals

### 4.1 1c—Conditional embedding, are you sure?, assent + assertion of complement + Q-A judgment

- (15) a. **Christopher:** If Cole discovered that Julian dances salsa, Logan will be joyful.  
 b. **Sandy:** Are you sure?  
 c. **Christopher:** Yes, I'm sure that Julian dances Salsa.

- (16) The two follow-ups will be acceptable, (only) if:  
 a. **At-issueness:**  
 Christopher's utterance was 'about' whether Julian dances Salsa, **and**  
 b. **Commitment:**  
 Christopher is committed that Julian dances Salsa

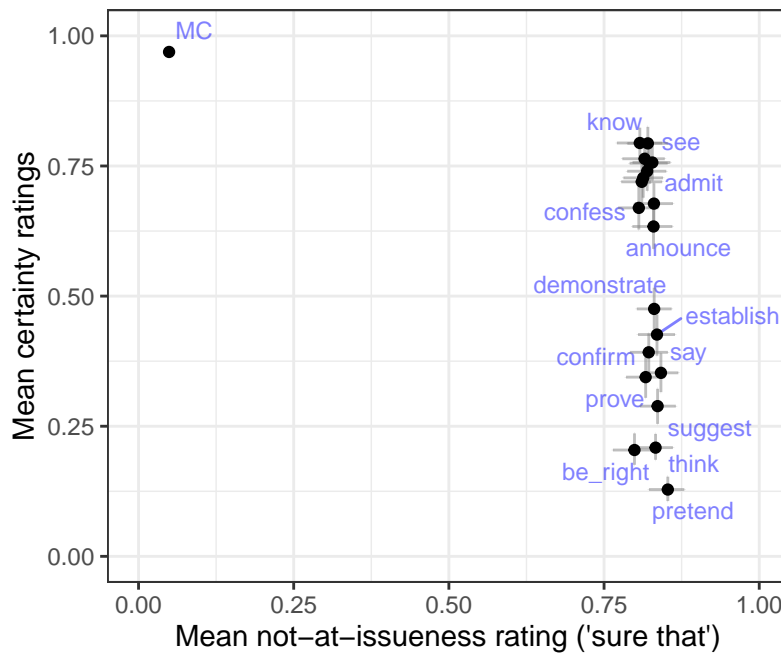


Figure 11: Mean not-at-issueness ratings vs mean certainty ratings by predicate, Exp. c1

Three points are relevant here:

- Regarding at-issueness:  
 We can assume that any content from a sentence-initial conditional antecedent, is hard to interpret as at-issue. The discourse has already progressed, and the sentence-final main clause is more likely to determine the relevant set of alternatives for the subsequent discourse. (Maybe it is worth taking into account a more dynamic view of at-issueness. Look clause-by-clause; Addressing the previous QUD vs determining relevant set of alternatives for subsequent discourse)
- Regarding speaker commitment:  
 Based on literal content, the speaker may or may not be committed to Julian dancing salsa.
- Regarding interaction of the two:
  - If content is at issue, it will be targeted by entailment cancelling operator, and now the speaker is not committed to the content. In that case, the follow-up is unacceptable by (16-b).
  - If content is not at-issue, it will project, and the speaker is committed. Now, however, the follow-up is unacceptable by (16-a).

## 4.2 2c—Conditional embedding, yes, that's true+complement diagnostic (+ acceptability rating)

- (17) a. Christopher: If Cole discovered that Julian dances salsa, Logan will be joyful.  
 b. Sandy: Yes, that's true, Julian dances salsa.

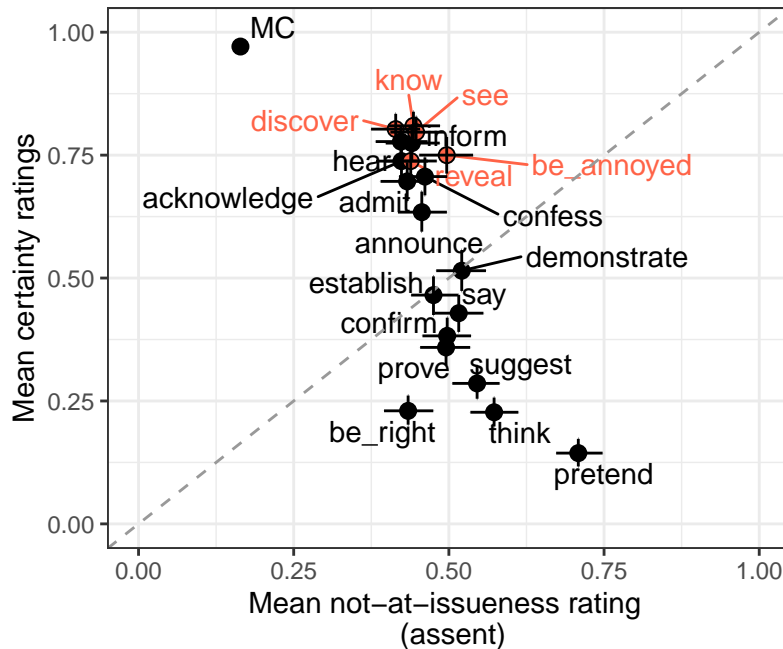


Figure 12: Mean not-at-issueness ratings vs mean certainty ratings by predicate, Exp. c2

## 4.3 3c—Conditional embedding, yes, that's true + negation of main clause (+ acceptability rating)

- (18) a. Christopher: If Cole discovered that Julian dances salsa, Logan will be joyful.  
 b. Sandy: Yes, that's true, but Cole didn't discover it.

## 5 Some more notes

## 5.1 At-issueness diagnostics

- some diagnostics of at-issueness for some propositions  $p, q$  associated with  $U$  may work fine for certain types of declaratives, based on
  - whether  $p, q$  are logically independent of each other
  - if  $p, q$  are both true according to speaker, if at-issueness of content can be diagnosed given the assumption that speaker is committed to content (or not)
- because of point about commitment definitely does not work for at-issueness of content under entailment-cancelling operators (point about commitment)
- may run into problems for embedded / matrix content, because these are related, unlike e.g. appositives (but like evidentials)

## 6 To do

- 1q+2q work nicely w lexical exceptions (exceptions have to do with veridicality)

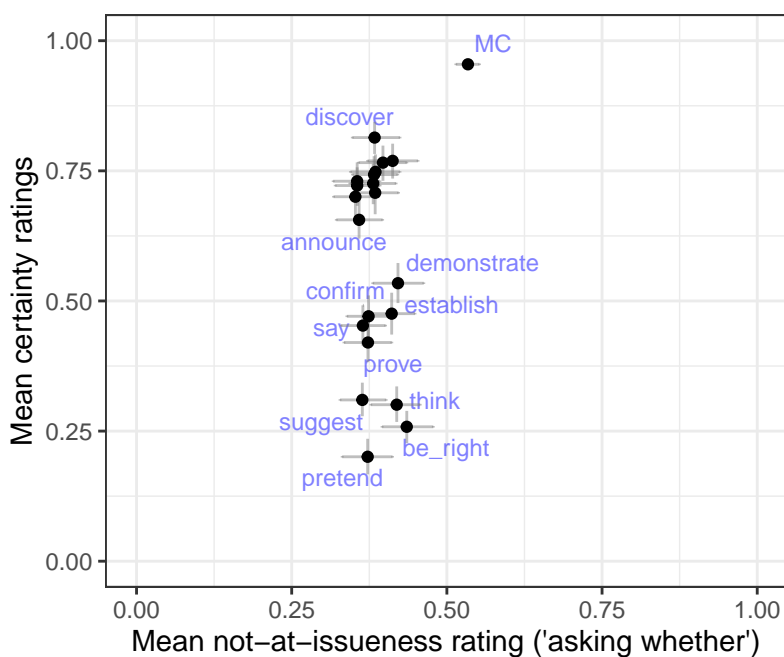


Figure 13: Mean not-at-issueness ratings vs mean certainty ratings by predicate, Exp. c3

- What is diagnosed here?
- What kinds of diagnostics correspond to theories of at-issueness?
- Polar questions vs assertions as different discourse moves; also responses to these interact with commitment in different ways
- Can we find a reliable diagnostic for at-issueness, about the same thing and across contexts?
- Aaron White and colleagues have data looking at negative inferences
- how do the different diagnostics and confounds w commitment shine a light on lexical differences?