

Mechanisms of generalized and  
particularized implicature:  
Breheny, Katsos, & Williams (2006) and  
Stiller, Goodman, & Frank (2011)

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Psych/Ling 236  
4/9/12

# Scalar implicature

An utterance  $U$  conveys a scalar conversational implicature

**iff**

there are alternative utterances  $U'$  that are at least as relevant as  $U$  in the discourse and that are communicatively stronger than  $U$ .

(The content of this implicature will depend on the context, the nature of the utterance competition, and other pragmatic factors.)

# Linguistic scales: Examples

- Few, some, many, most, all
- Or, and
- 1, 2, 3, 4, 5, ... ,  $N$
- Good, excellent
- Warm, hot
- Sometimes, often, always
- Want to  $V$ , try to  $V$ , succeed in  $V$ ing
- Possibly  $p$ ,  $p$ , necessarily  $p$
- Possible that  $p$ , probable that  $p$ , certain that  $p$
- May, should, must
- Cool, cold
- Like, love
- Not all, none

# Scalar implicature: Breheny's example

1. John: Was the exam easy?

Mary: Some of the students failed.

2a. Not all of the students failed.

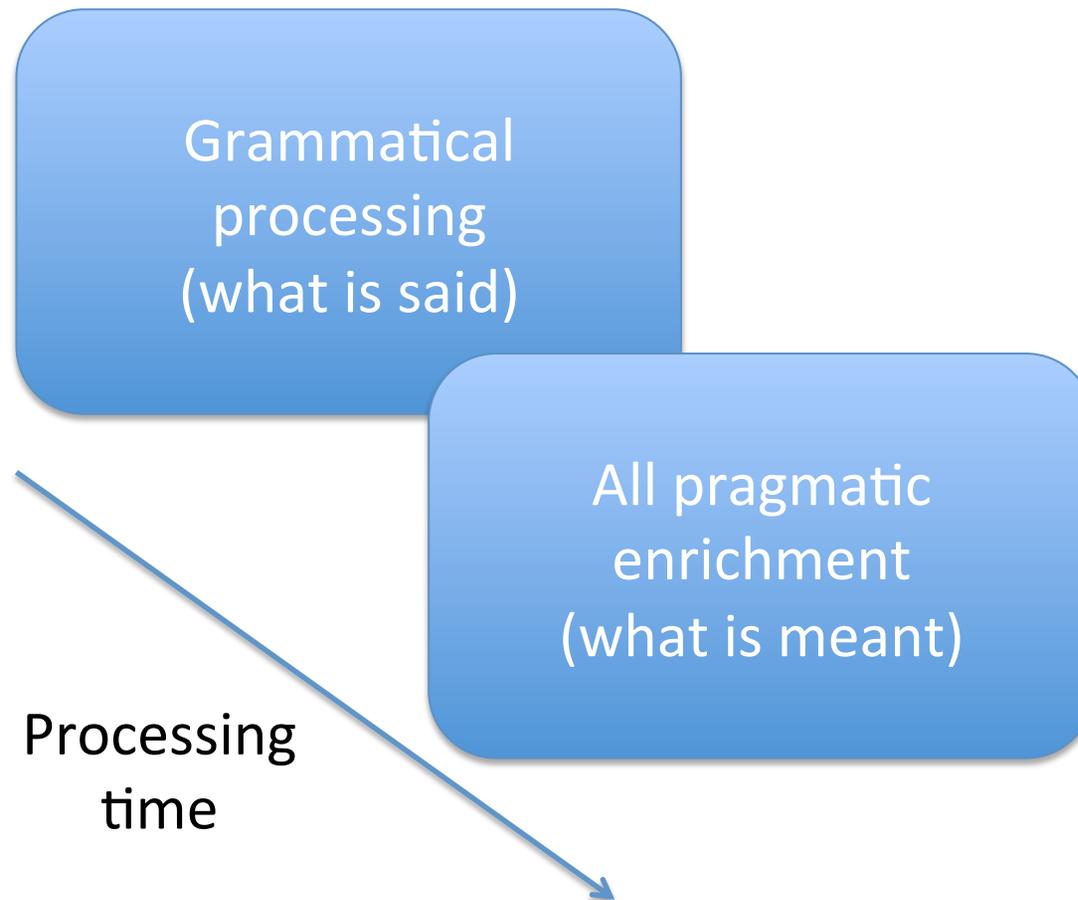
2b. The exam was not easy.

- 2a argued to be a scalar implicature, maybe more “generalized”
- 2b maybe more “particularised”?
- Is there a difference between these two types of implicature?

# Kinds of difference between G and P

- GCIs and PCIs could differ in terms of their most parsimonious formal description
  - There could be a class of model that described one and not the other (e.g. FSGs vs. CFGs)
  - But this doesn't seem to be what (BKW / CFS / etc.) are after
- Fundamentally a psychological claim: GCIs and PCIs are different in the mind
  - But what does this claim mean?

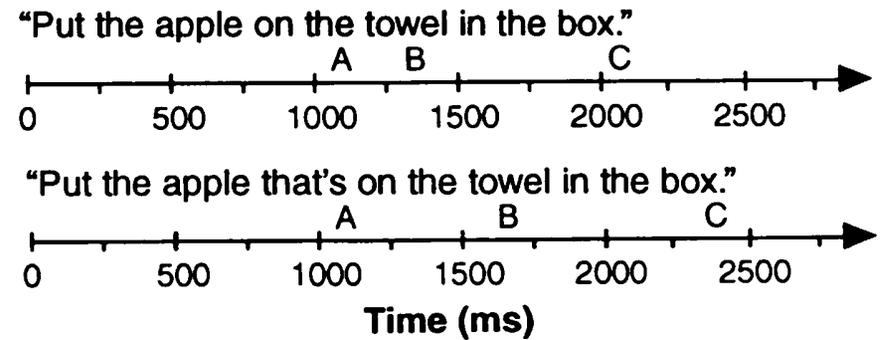
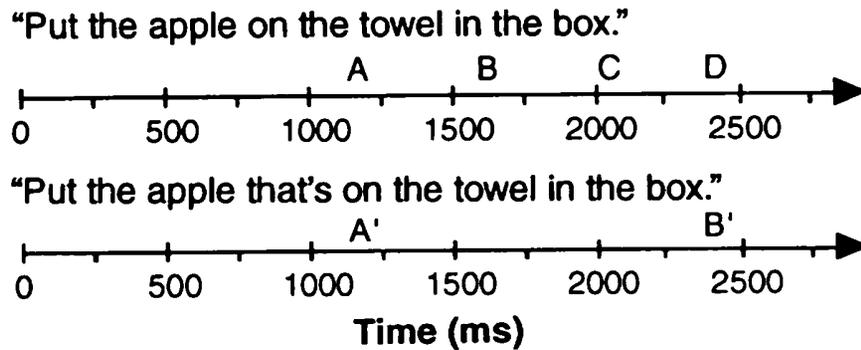
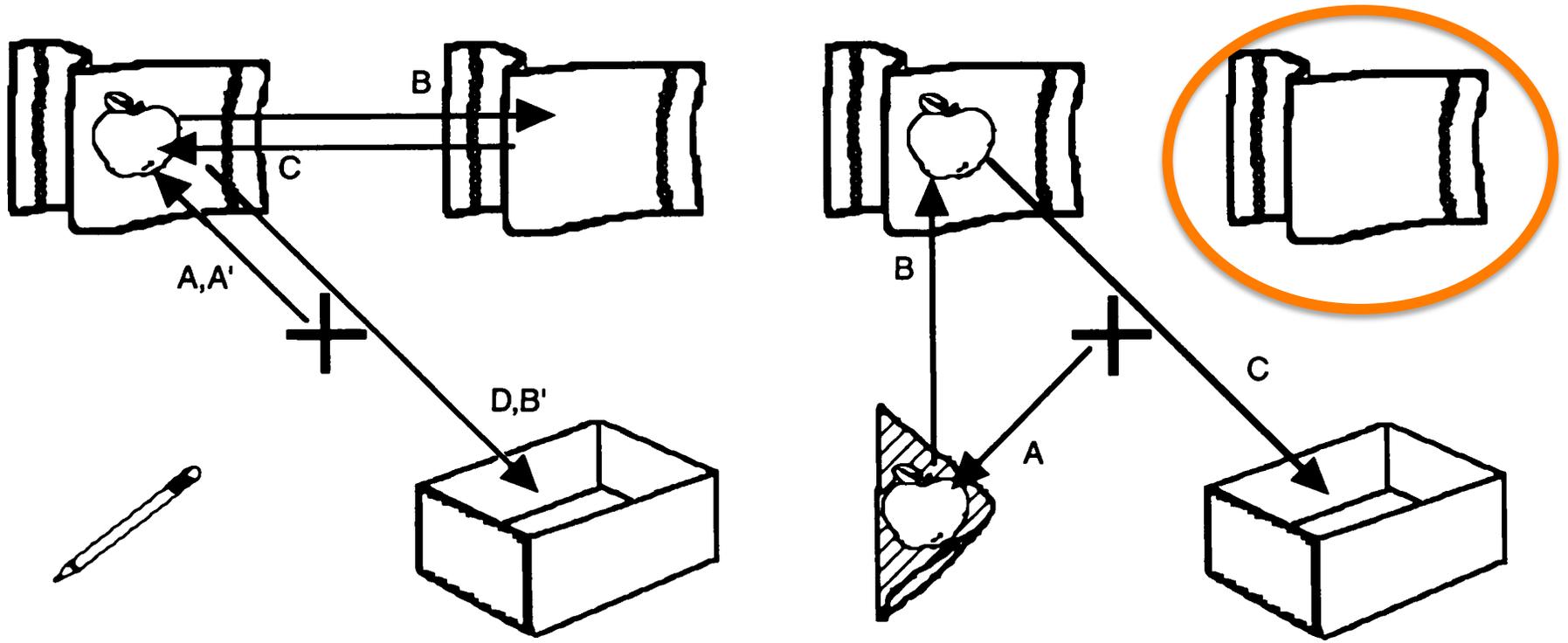
# A naïve model of comprehension



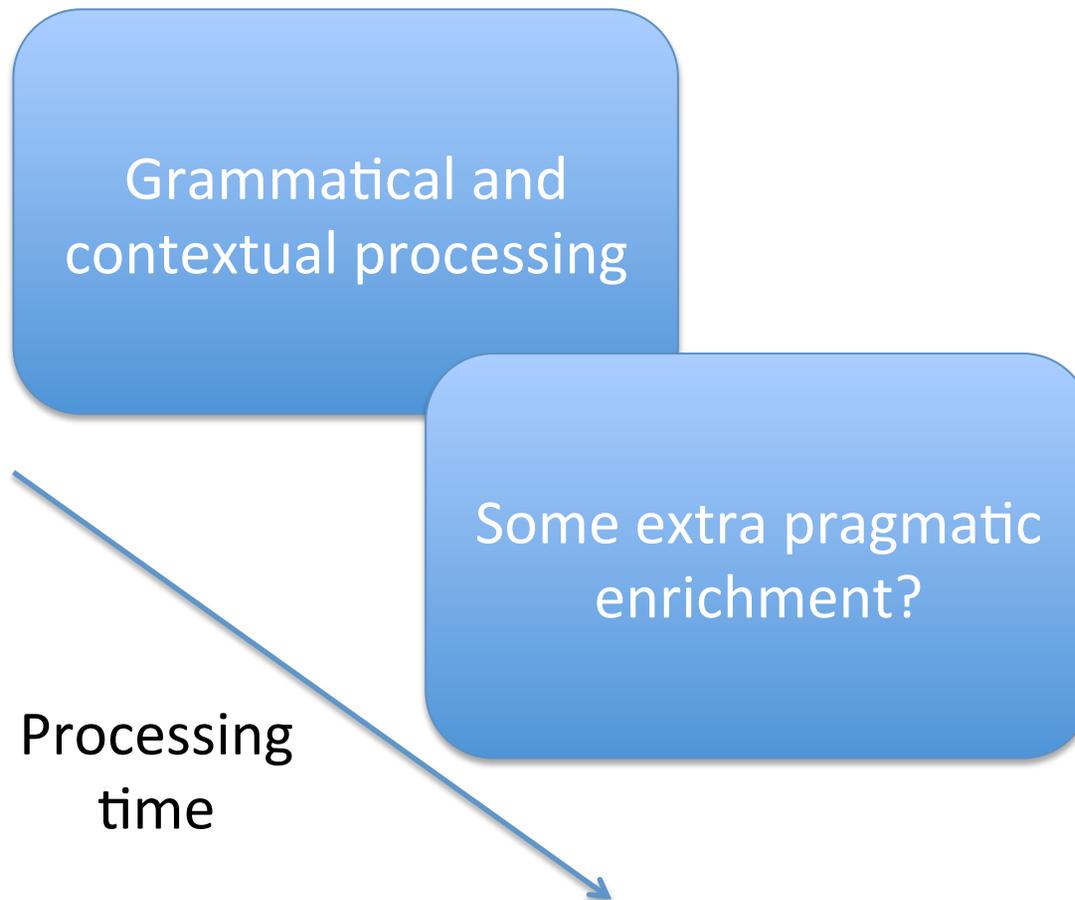
# Time course of constraint availability

- An early hypothesis: “modularity” (Frazier, 1979):
  - Syntax first, then contextual processing
- Interactions between syntactic expectations and
  - Lexical frequency: Trueswell (1996); Gibson (2006)
  - Plausibility: Trueswell, Tanenhaus & Garnsey (1994); Kim & Osterhout (2005)
  - Context: Tanenhaus et al. (1995); Trueswell et al. (1999)
- These interactions tend to happen as early as we can measure them in processing

# Tanenhaus et al. (1995): Early availability of context



# Revised model of comprehension



# Ways that a difference could be a difference

- Different processing systems
  - “different brain parts”?
  - Relies on some kind of modularity claim
- Different processing complexities in the same system
  - E.g. more iterations or recursions of computation
- Different sets of inputs to the same system
  - E.g. one requires contextual information or mentalistic information
- Different modes of processing in the same system
  - Online computation vs. offline storage
  - “caching” of frequent but complex computations

# Scalar implicature: contextual support

- Scalar implicatures are not present in all contexts
- **Lower-bound contexts:** only lower bound is relevant in the context (no SI? SI cancelled?)
- **Upper-bound contexts:** upper bound is relevant as well (SI is important)

*Context:* If you get [4/4 or  $> 1/4$ ] darts in the board you win the prize.

Q: Did Jill get the prize?

A: She got some of the darts on the board.



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# Are generalised scalar implicatures generated by default? An on-line investigation into the role of context in generating pragmatic inferences

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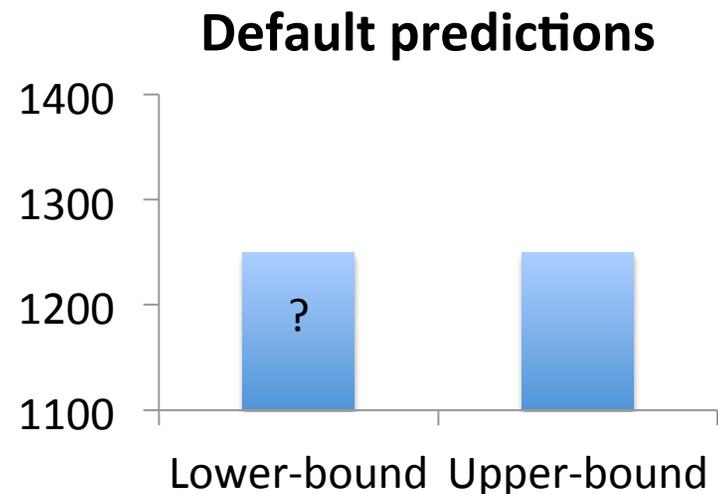
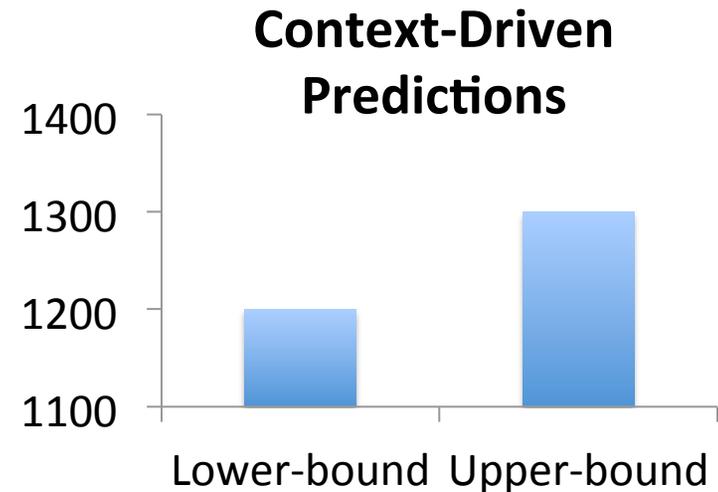
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Received 30 March 2005; revised 1 July 2005; accepted 4 July 2005

# Breheny et al.: Experiment 1

- Distinguish Context-Driven (Relevance etc.) and Default (CFS, Levinson) approaches
- Context-Driven implies no SI in lower-bound contexts, while Default implies SI will happen and maybe be canceled



+

John was taking a university course

and working at the same time.

For the exams

he had to study

from short and comprehensive sources.

Depending on the course,

he decided to read

the class notes or the summary.

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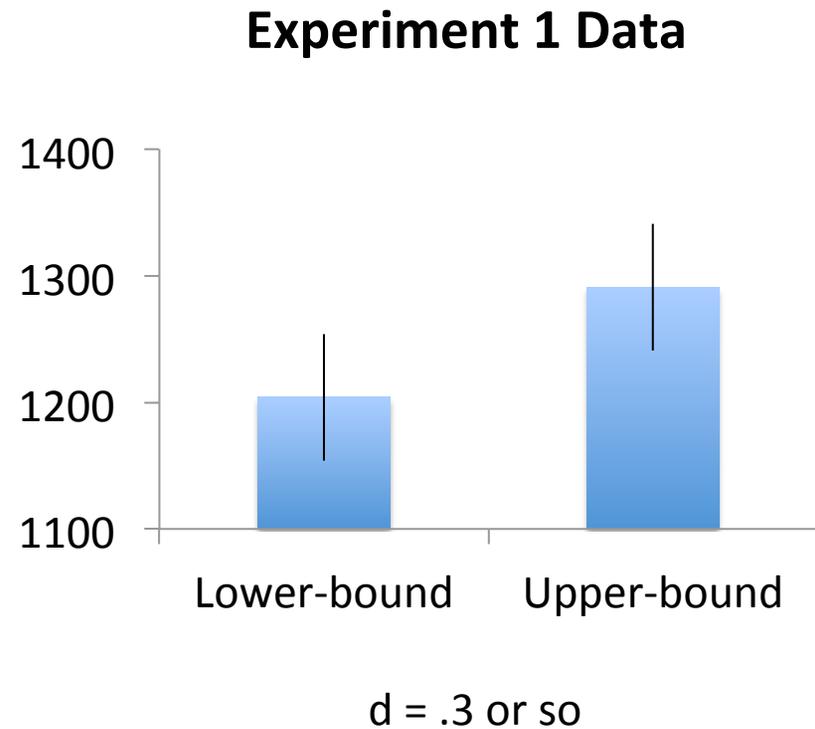
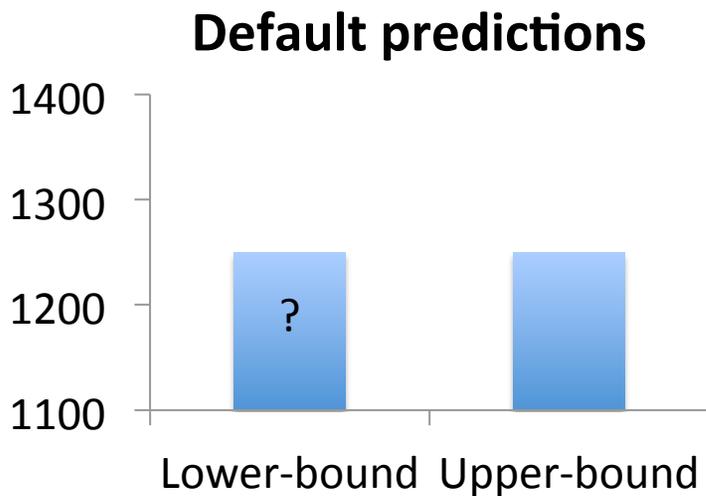
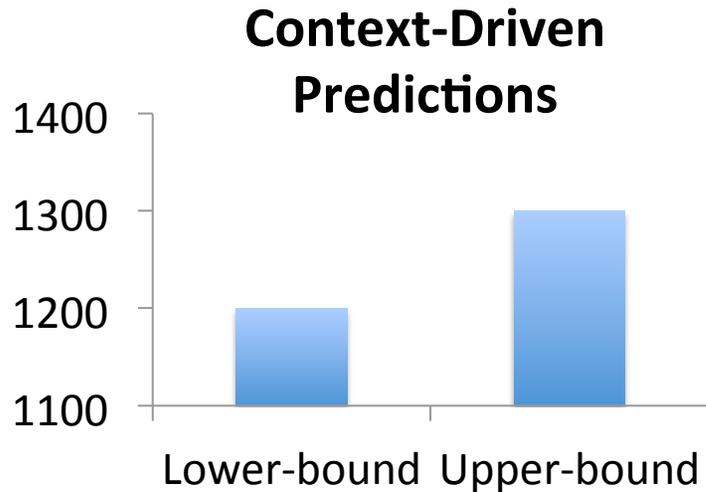
John was not working.  
(yes/no)

(only 33% of items had questions)

# Breheny: Experiment 1

- *Upper-bound context.* John was taking a university course and working at the same time. For the exams he had to study from short and comprehensive sources. Depending on the course he decided to read the class notes or the summary.
- *Lower-bound context.* John heard that the textbook for Geophysics was very advanced. Nobody understood it properly. He heard that if he wanted to pass the course he should read the class notes or the summary.

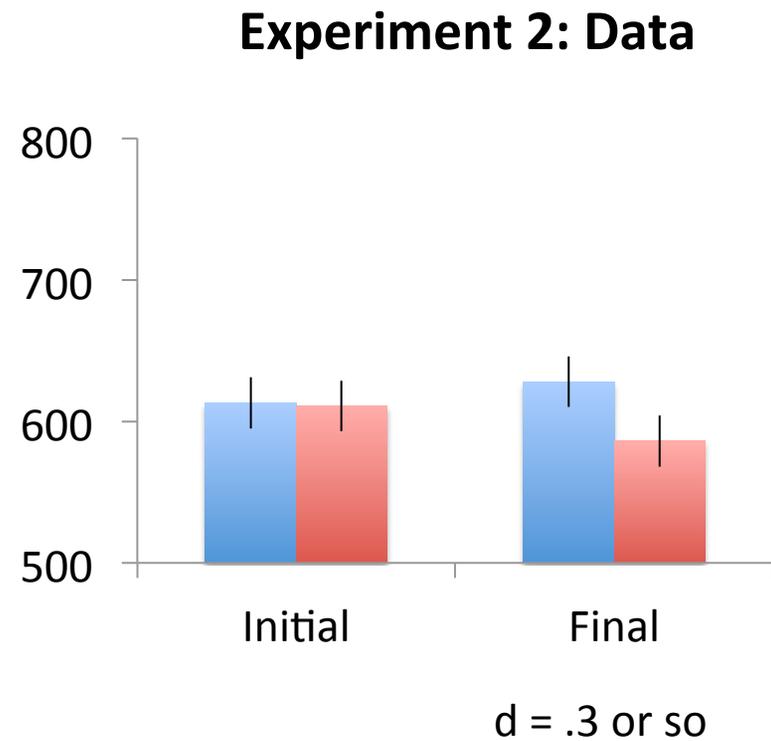
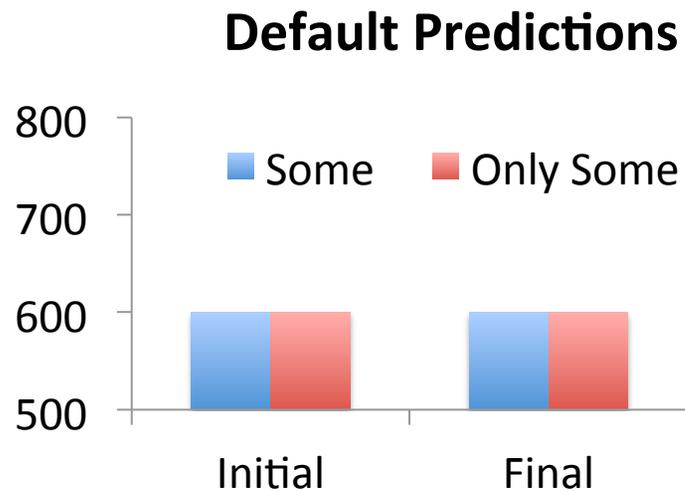
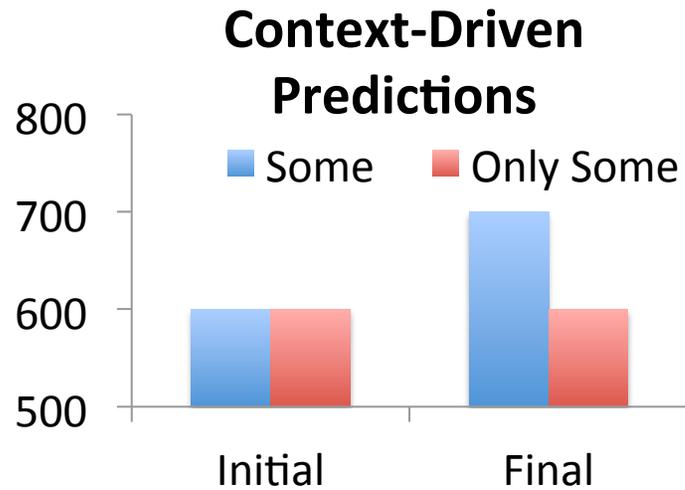
# Breheny et al.: Experiment 1 Data



# Breheny et al.: Experiment 2

- Materials:
  - **Initial:** [*Only*] Some of the consultants/had a meeting/with the director./The rest/did not manage/to attend.
  - **Final:** The director/had a meeting/with [*only*] some of the consultants./The rest/did not manage/to attend.
- Initial position new information, final position old information (esp. in Greek)
  - Hence should be no SI in initial position
  - Why?

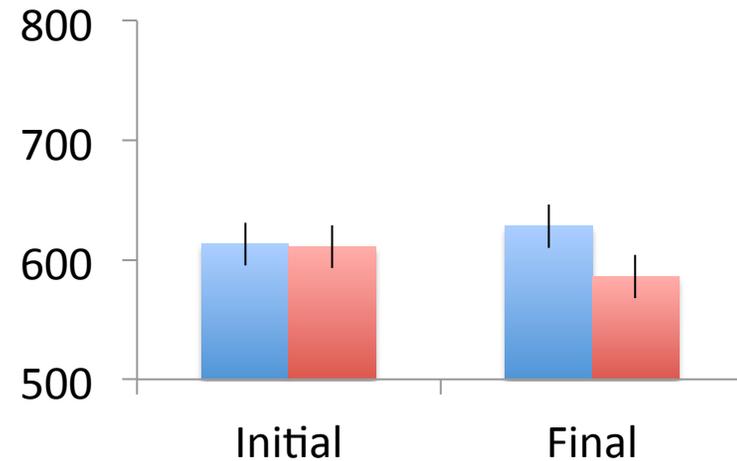
# Experiment 2: Predictions and Data



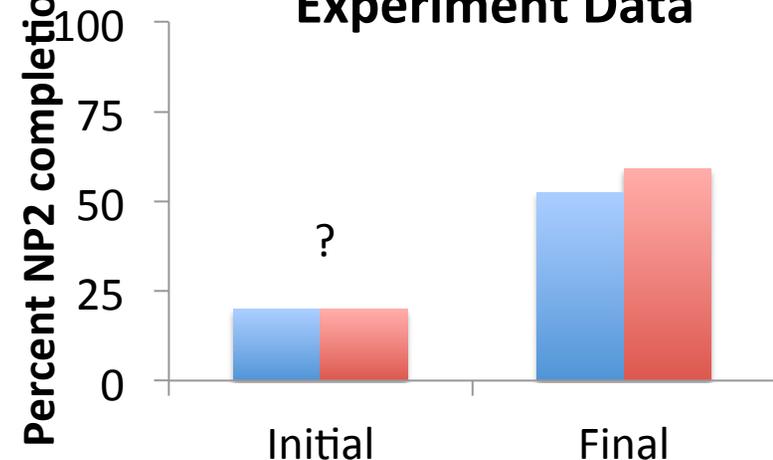
# Methodological note

- This may just have to do with anaphora: perhaps the initial/final condition or even “some” / “only some” have different completion preferences
- Norming expt. not significant, but goes in right direction? They don't give all the data.

**Experiment 2: Data**



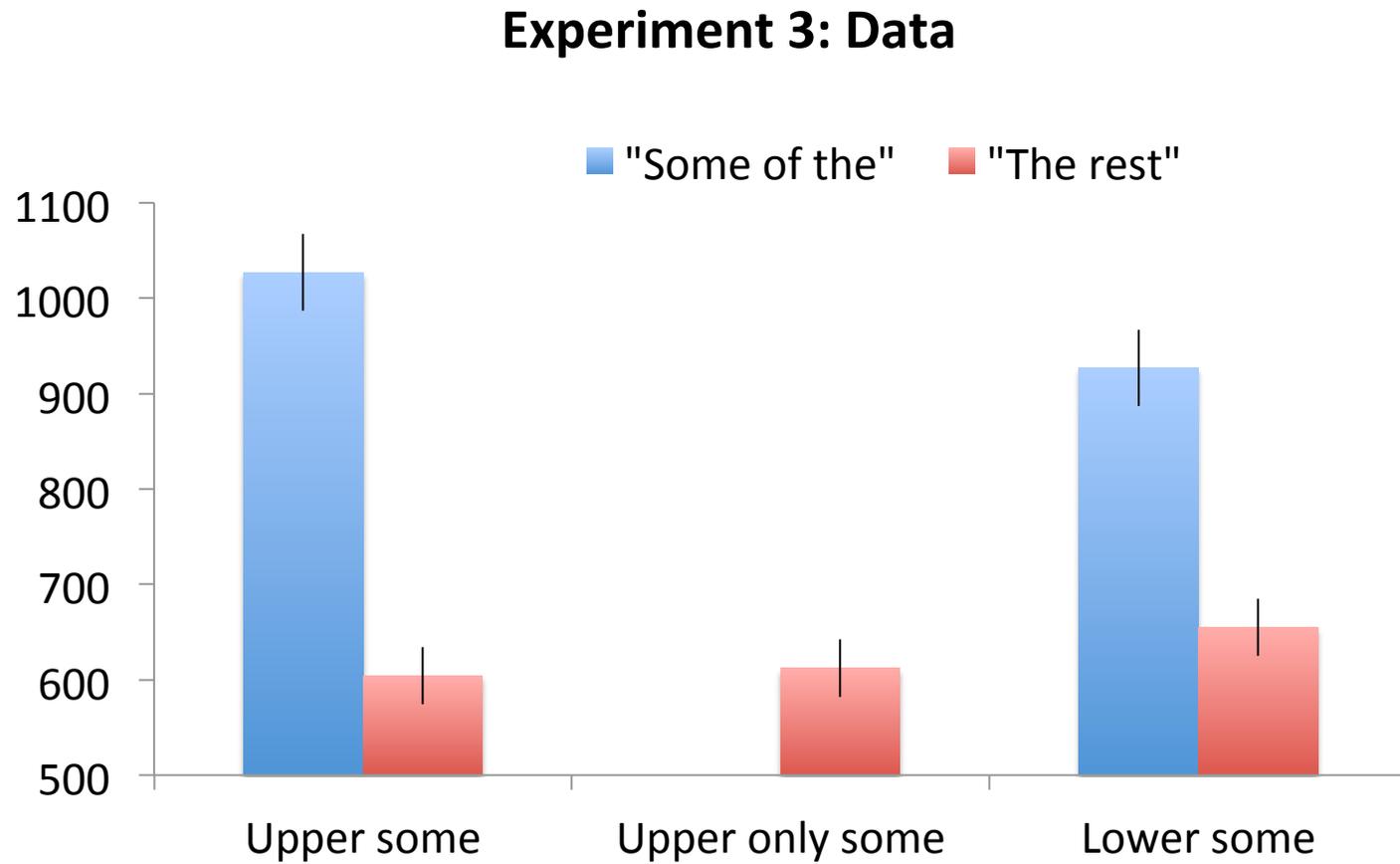
**Experiment 2: Completion  
Experiment Data**



# Breheny et al.: Experiment 3

- Perhaps sentence position is a “plug”: an automatic block for SI
  - What does this mean? Somewhat implausible.
- Materials:
  - ***Upper-Bound Context***: Mary/asked John/whether he intended to host/all his relatives/in his tiny apartment./John replied/that he intended to host/[*only*] some of his relatives./The rest/would stay/in a nearby hotel.
  - ***Lower-Bound Context***: Mary was surprised/to see John/cleaning his apartment/and she asked/the reason why./John told her/that he intended to host/some of his relatives./The rest/would stay/in a nearby hotel.

# Breheny et al.: Experiment 3 Data



# Caveats from Huang & Snedeker (2009)

... the upper-bounded context not only emphasizes the need for a boundary, it also

(1) contains considerably more overlap between the context sentence and the target sentence,

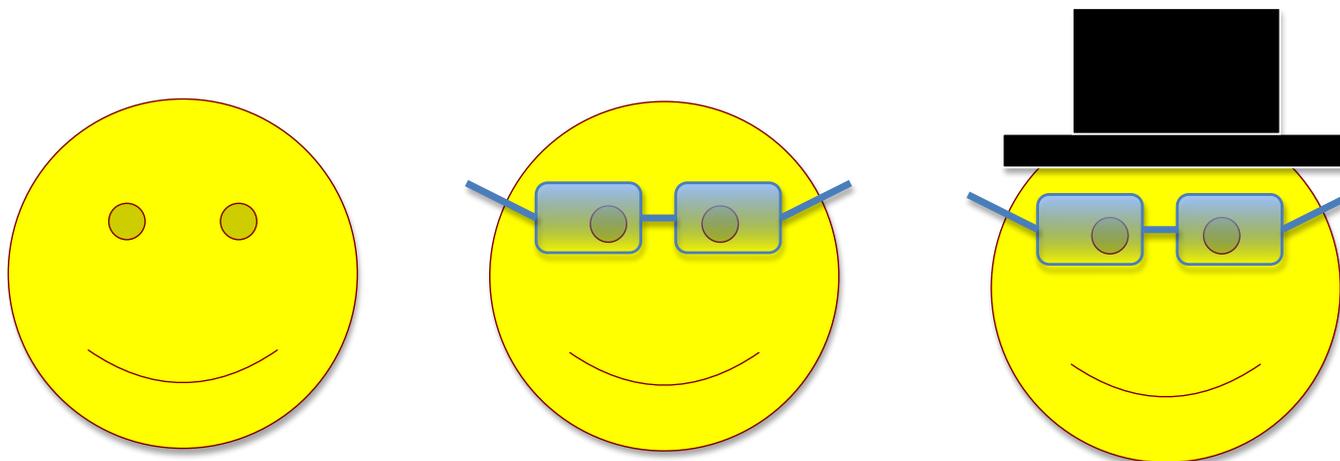
(2) makes use of the contrasting scalar term (all), and

(3) provides an antecedent in the discourse (“all his relatives”) for the critical scalar phrase (“some of his relatives”)

# Breheny et al.: Comments

- Experiment 1
  - Generally reasonable
  - Contexts very unmatched, makes strong inferences difficult
  - Limited comprehension questions (all expts.)
- Experiment 2
  - RTs very short, differences are relatively small
  - relies on a number of linking assumptions
  - anaphora problem with control experiment
- Experiment 3
  - Contexts unmatched (see H&S2009)
  - Lexical priming issue (see H&S2009)
  - Anaphora issues also?

# Stiller, Goodman, & Frank (2011)



My friend has glasses. Can you show me  
my friend?

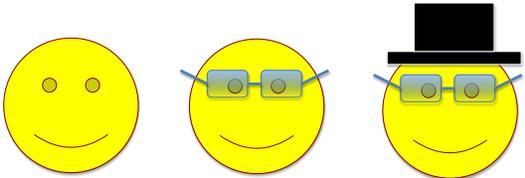
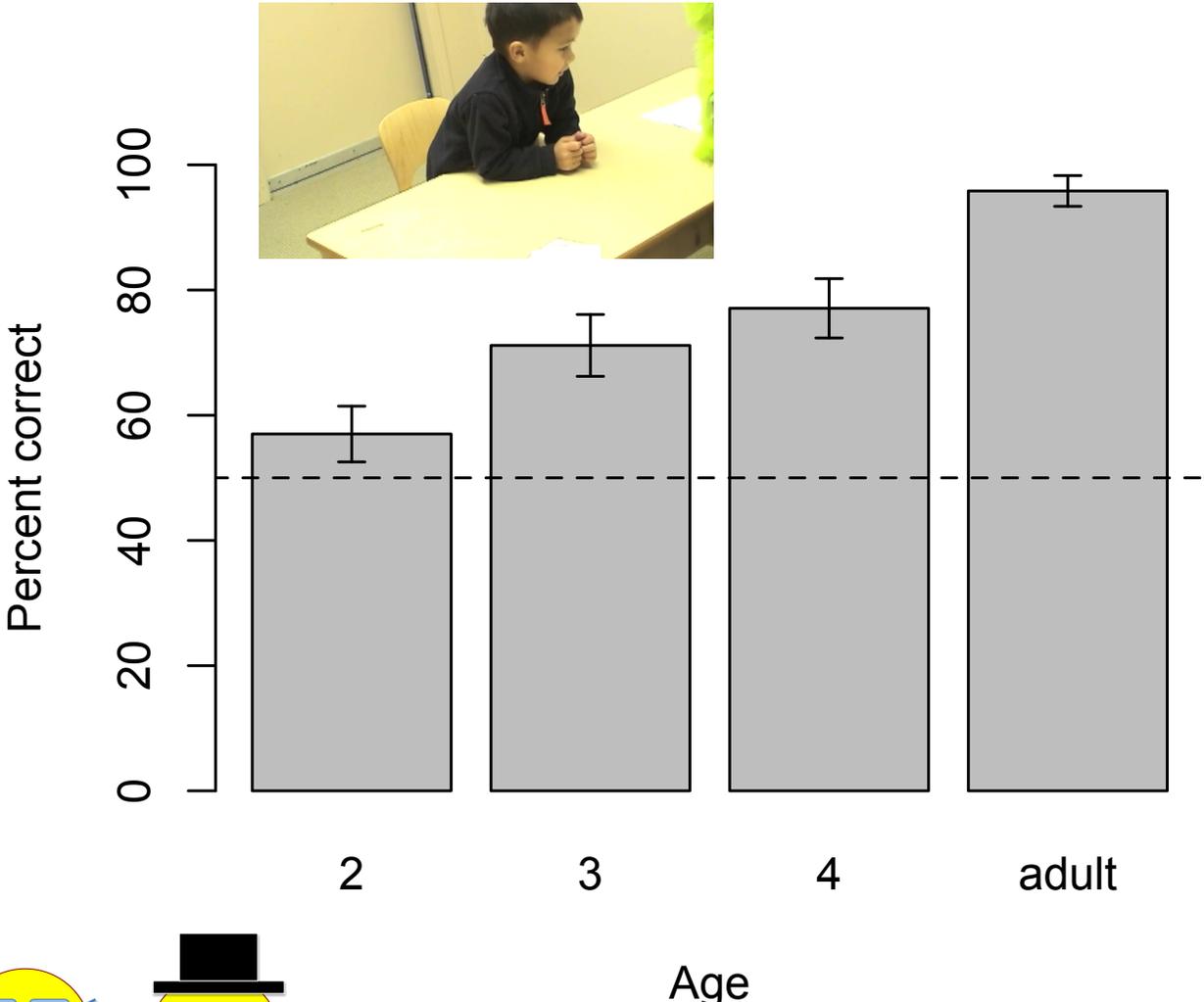
Note: same as “some of the students passed the  
test,” but without quantifiers

# Stiller, Goodman, & Frank (2011)

- Experimental strategy: examine “ad-hoc” scalar implicatures
- Developmentally: tests implicature ability, making an end-run around
  - lexical knowledge (Smith, 1980)
  - availability of alternatives (Barner et al., 2011)
- Allows manipulation of various non-linguistic factors without worrying about linguistic confounds

# Ad-hoc pragmatic inference

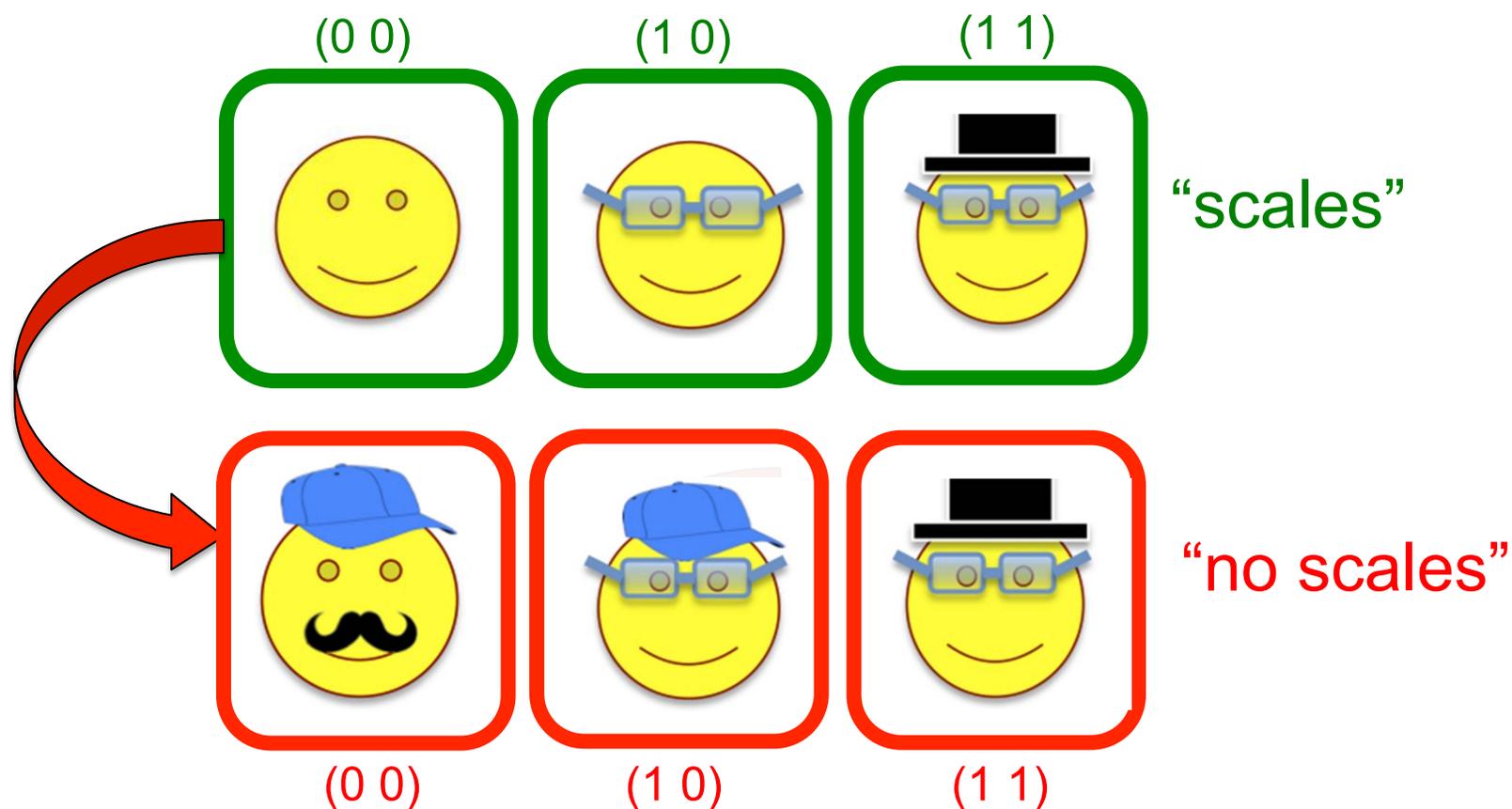
N=24 per group



+ 3 other stimulus sets

Stiller, Goodman, & Frank (2011)

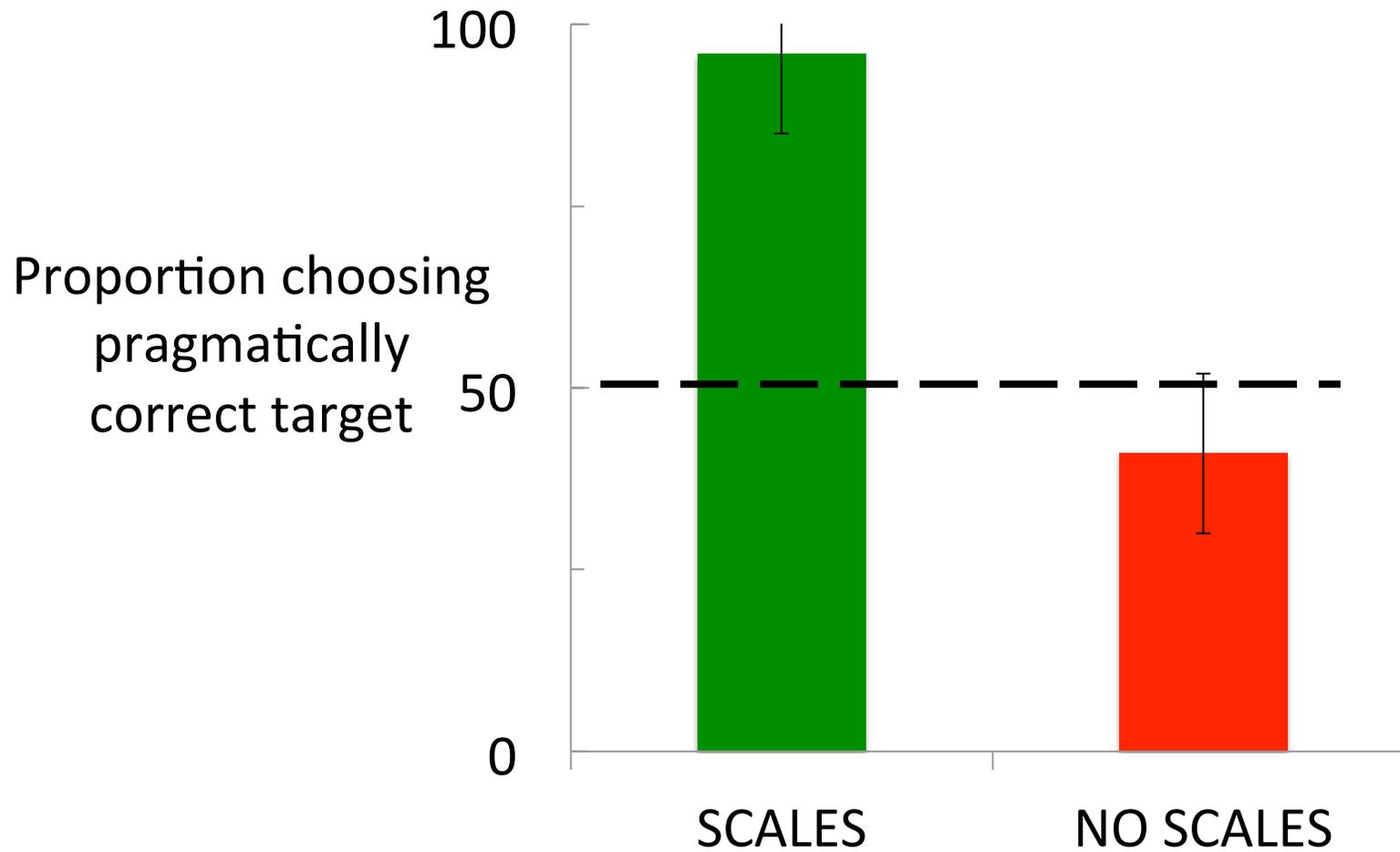
# A puzzle for this view



Failure seems odd on a straight neo-Gricean account, more plausible on CFS (2008)

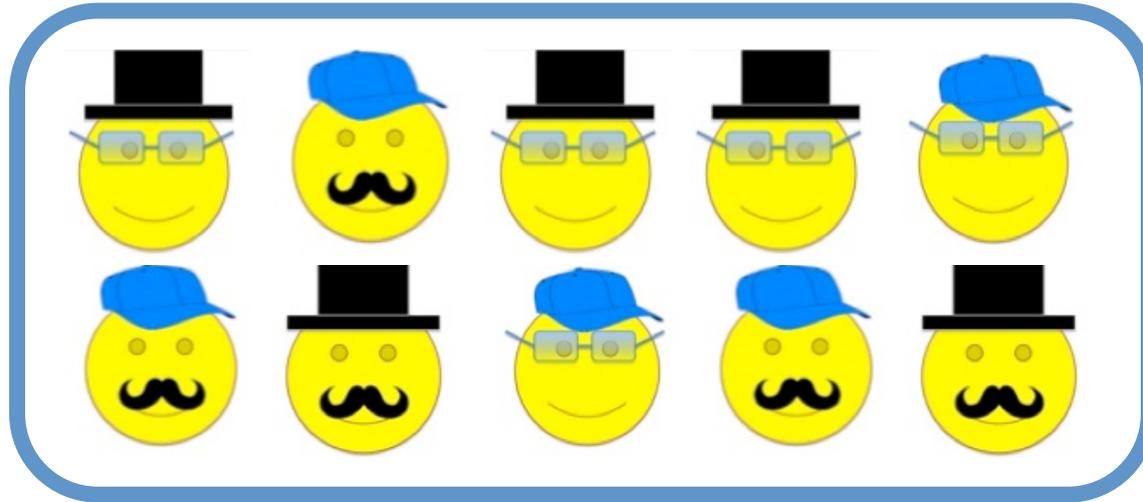
# “No scales”: adult data

N=24 in each group



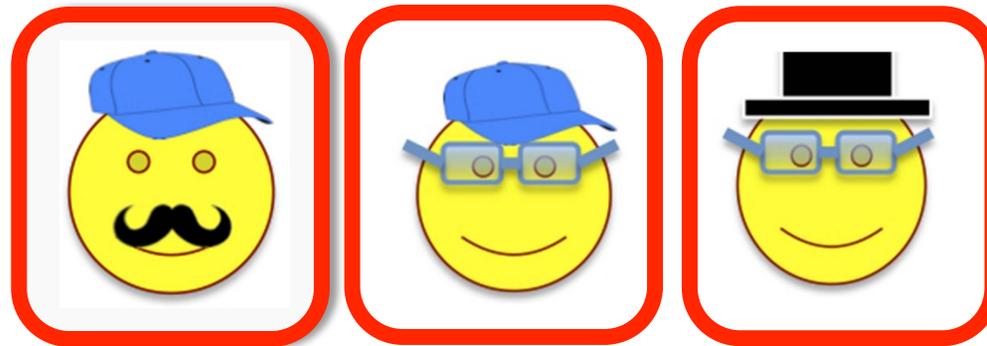
# Modifying speaker production probability

Here are all the people:

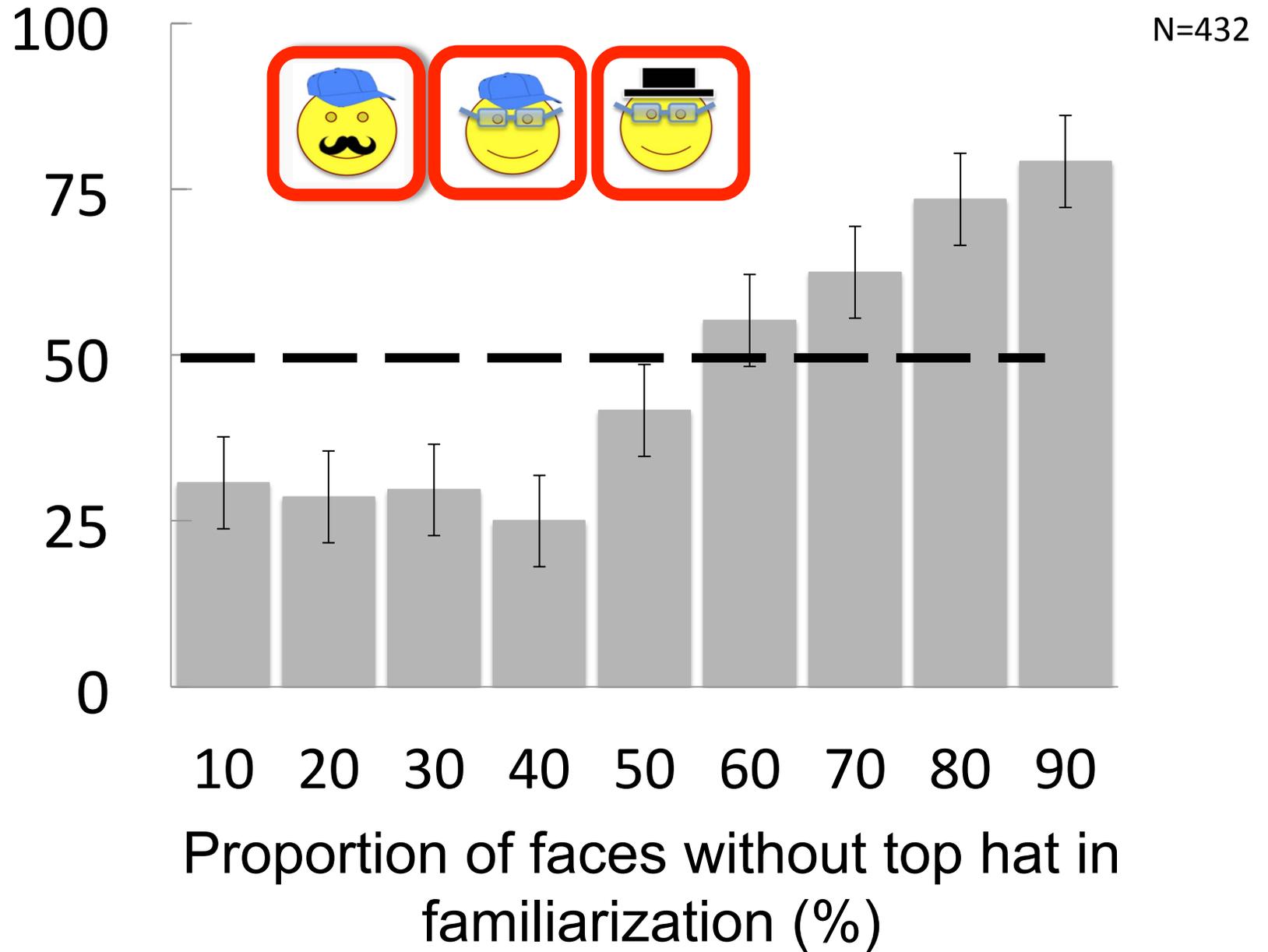


My friend has glasses.

Can you show me my friend?



# Base rate data



# Stiller et al.: Conclusions

- (Some) simple inference accounts don't predict "no scales" result
- Grammatical accounts don't predict base-rate effects
- Need to deal with both, points the way towards a probabilistic inference theory
  - Frank & Goodman (in press)
  - Goodman & Stuhlmuller (in press)
  - But **lots** to work out before that