24.904
Language Acquisition

Class 22: Exhaustivity Inferences, continued

Last time

- **Pragmatics**: the study of how people **use** language in context

- Sometimes, there's a difference between the literal meaning and the intended meaning when something is used in conversation.

- "Some of the girls smiled":

  ‣ Logical/literal/"technically": Compatible with all of the girls smiled

  ‣ Typical use/intended message: Some, but not all of the girls smiled

- The "not all" piece is an inference based on reasoning about stronger/more informative things the speaker could have said, but didn't; a **scalar implicature**
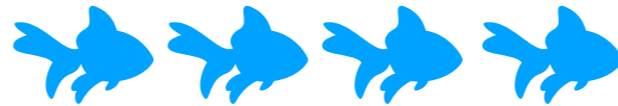
Last time

- A number of developmental studies seem to show that children compute scalar implicatures at lower rates than adults, e.g. accepting under-informative *some* sentences when adults would reject them

Some of the fish are blue
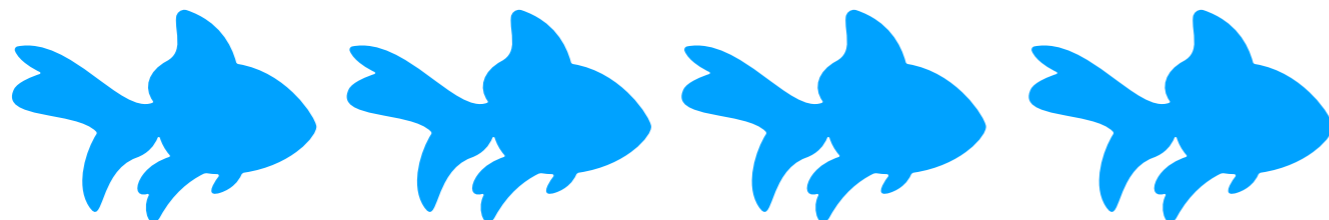
Kids: Yes
Adults: No

Where are they going awry?

S = *Some of the fish are blue.*

Step 0: Gricean norms of conversation

Step 1: Generate alternatives to S

ALT = *{All of the fish are blue}*

Step 2: Reason about speaker's epistemic state

Does speaker consider the *all* variant relevant? Is speaker likely to be knowledgeable about the *all* variant?

Step 3: Negate stronger alternatives, yielding the strengthened meaning:

Some of the fish are blue & not all of the fish are blue

Where are they going awry?

- Foppolo, Guasti and Chierchia (2012)

- Two experiments: TVJT (conceptual replication) vs. Felicity Judgment

Where are they going awry?

- Foppolo, Guasti and Chierchia (2012)
- TVJT: 63 4-to-7-yos
- Critical trials = underinformative *some*-statements (5x):

"This is a story about a group of Smurfs that are on holiday. Look how many of them we have! They can do a lot of interesting things here. See ... they have a boat, so they can go for a trip on the river by boat. They also have a car and they can drive their car in the forest. Let's see how many will opt for the boat trip and how many would opt for the car trip. Let's see what happens."

[in the end all Smurfs opt for the boat trip.]
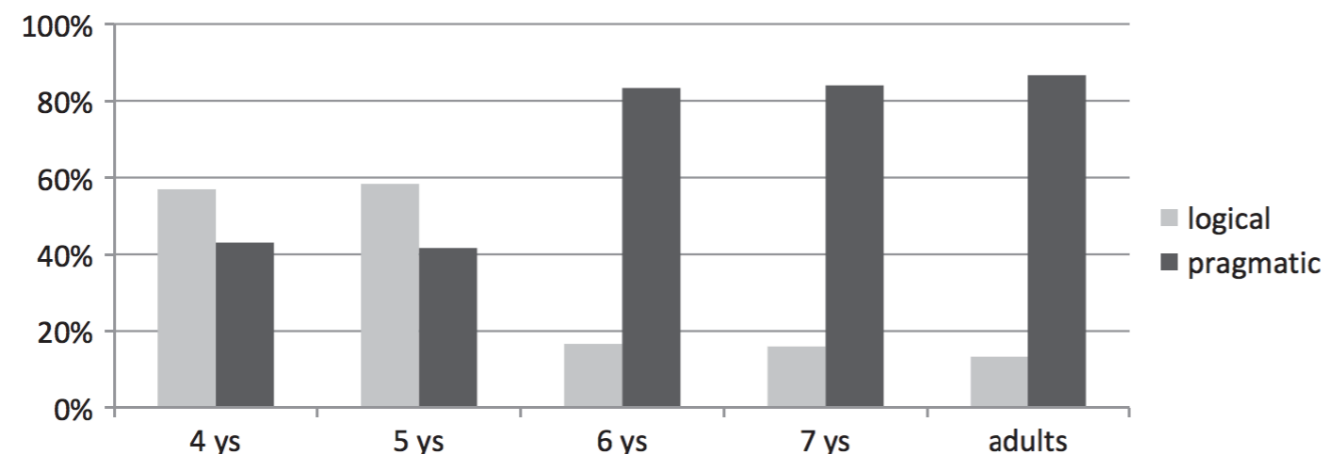
Puppet: *Some Smurfs are going on a boat*

FIGURE 1 Incidence of logical (=acceptance of underinformative-*some*) and pragmatic (=rejection of underinformative-*some*) responses in the developmental study (children from 4 to 7 years of age and adults).

Where are they going awry?

Some smurfs are going on a boat

Puppet 1

All smurfs are going on a boat

Puppet 2

- Felicity Judgment Task

  ‣ a subset of 17 5-yo participants from Exp 1 who failed to derive SIs

  ‣ same stories, but two puppets present alternative descriptions of the scenes

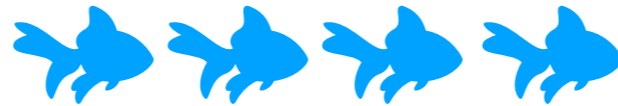 ‣ 95% adult-like in these cases

- **Upshot:** not Step 0

Where are they going awry?

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Some of the fish are blue & not all of the fish are blue

Where are they going awry?

- Barner et al. (2010)

- Goal: test the possibility that the issue lies with Step 1, the generation of scalar alternatives

- Test case: *only*

Only

- [[only S]] = S is true and for all S' s.t. S $\not\Rightarrow$ S', S' is not true

Only

- [[only S]] = S is true and for all S' s.t. S $\nRightarrow$ S', S' is not true

  (1) Only course 24 students are happy.

- What's the problem here?

Only

- [[only S]] = S is true and for all S' s.t. S $\nRightarrow$ S', S' is not true

- **Solution:** Domain restriction

  ▸ Like all natural language quantifiers, the domain of *only* is restricted

  ▸ Unlike quantifiers ranging over individuals, the restriction of *only* is a set of <u>sentence</u> meanings, ALT

Only

- [[only ALT S]] = S is true and for all S' ∈ ALT s.t. S ⇏ S', S' is not true

  (1) Only course 24 students are happy.
   ALT = {*Course 2 students are happy,*
      Course 6 students are happy,
      Course 8 students are happy,
      Course 9 students are happy…}
   = Course 24 students are happy
   … and it's not the case that course 2 students are happy, course 6 students are happy…
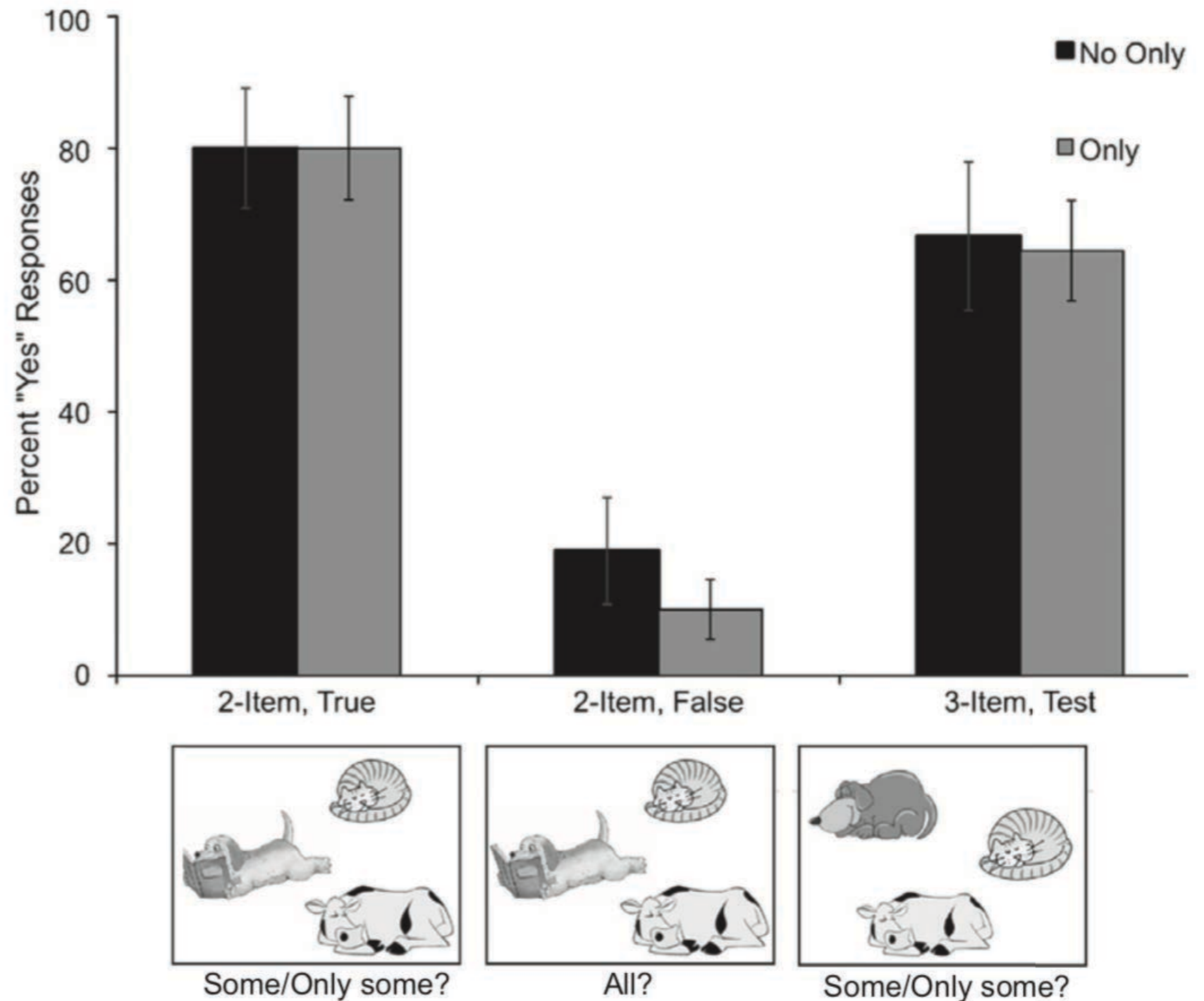
Barner et al. 2010

- 60 4-year-olds tested on 4 types of critical sentences

  a. Are some of the animals sleeping?

  b. Are only some of the animals sleeping?

  c. Are the dog and the cat sleeping?

  d. Are only the dog and the cat sleeping?
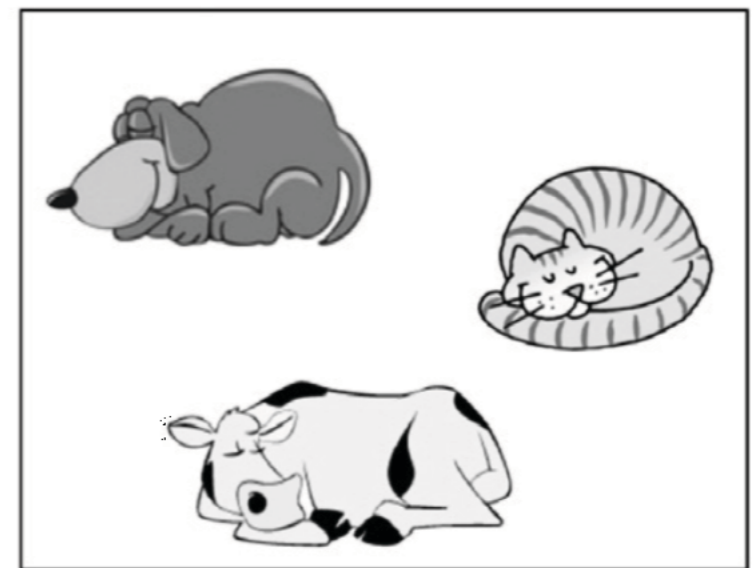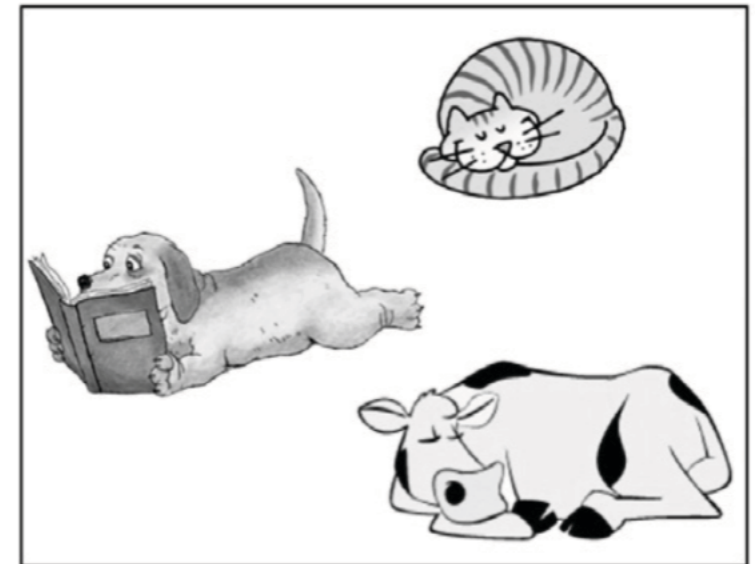
Barner et al. 2010

Adult-like behavior

- **2/3 sleepers**
  - ▸ *some*: literally true
  - ▸ *only some*: literally true

- **3/3 sleepers**
  - ▸ *some*: literally true, pragmatically underinformative
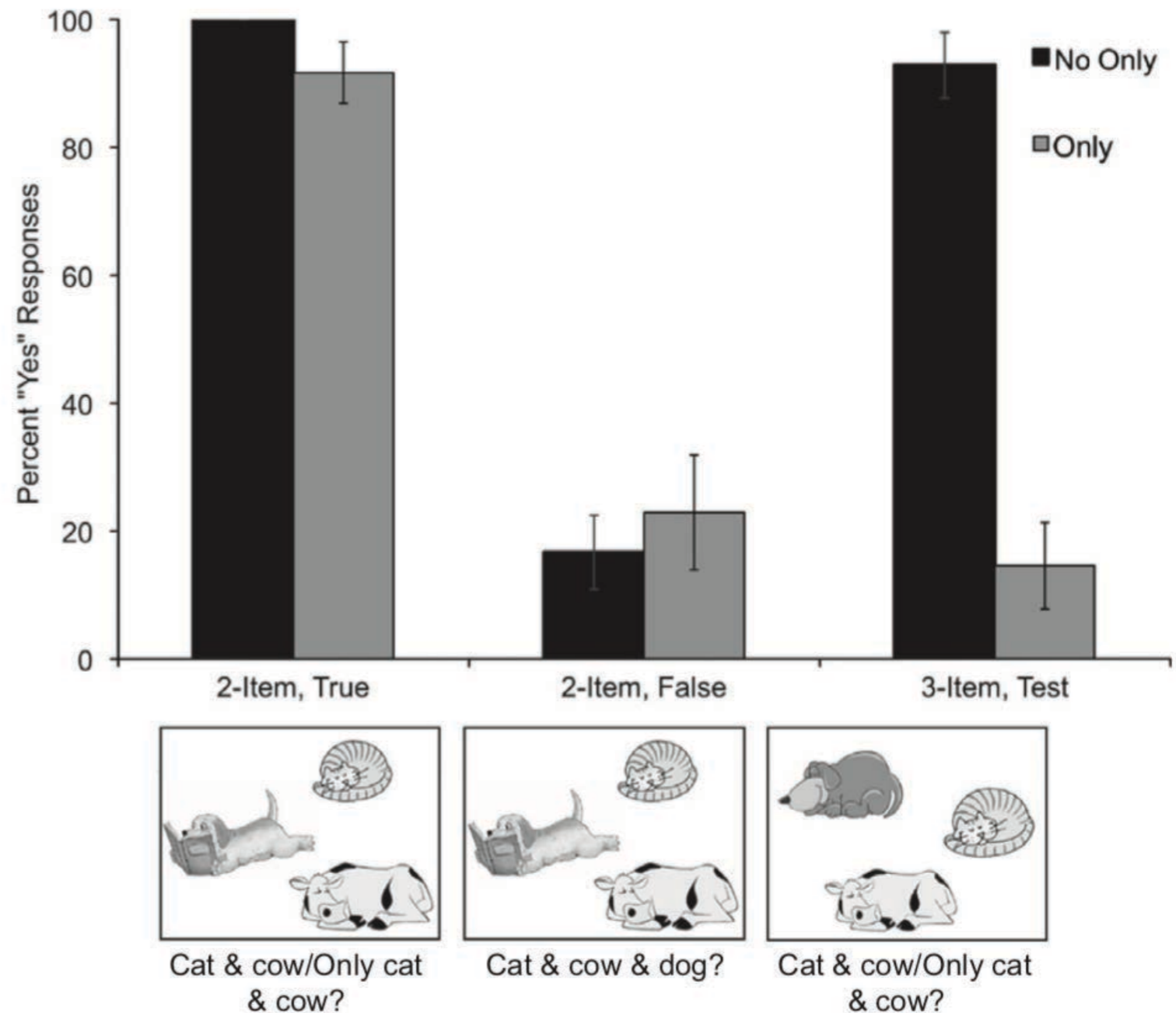 - ▸ *only some*: literally false

Barner et al. 2010

Adult-like behavior

- **2/3 sleepers**

  ‣ *cat & cow*: literally true

  ‣ *only cat & cow*: literally true

- **3/3 sleepers**

  ‣ *cat & cow*: literally true, pragmatically underinformative

  ‣ *only cat & cow*: literally false

Cat & cow/Only cat & cow?

Cat & cow & dog?

Cat & cow/Only cat & cow?

Barner et al. 2010

- The fact that children fail to compute the strengthened meaning **<u>even when required by the semantics</u>** (with *only*) taken as indication that children have difficulty spontaneously generating scalar alternatives

- Corroborated by the fact that when the alternatives are explicitly given (only the cat and dog—> the cat, the cat), children do not show parallel difficulties.

  - So: no independent issues with alternative negation

Where are they going awry?

S = *Some of the fish are blue.*

Step 0: ~~Gricean norms of conversation~~

Step 1: Generate alternatives to S

ALT = *{All of the fish are blue}*

> Barner et al: the problem is here!

Step 2: Reason about speaker's epistemic state

Does speaker consider the *all* variant relevant? Is speaker likely to be knowledgeable about the *all* variant?

Step 3: ~~Negate stronger alternatives, yielding the strengthened meaning:~~

Some of the fish are blue & *not all of the fish are blue*

What exactly is the issue with alternative generation?

- The child might not yet have learned that *some* and *all* lie on the same quantifier scale?

- Even if they have learned this, they might not have the resources to selecting the right bit of the "unsaid" from all kinds of things that was unsaid

Where are they going awry?

S = *Some of the fish are blue*

Step 0: ~~Gricean norms of conversation~~

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Does speaker consider the *all* variant relevant? Is speaker likely to be knowledgeable about the *all* variant?

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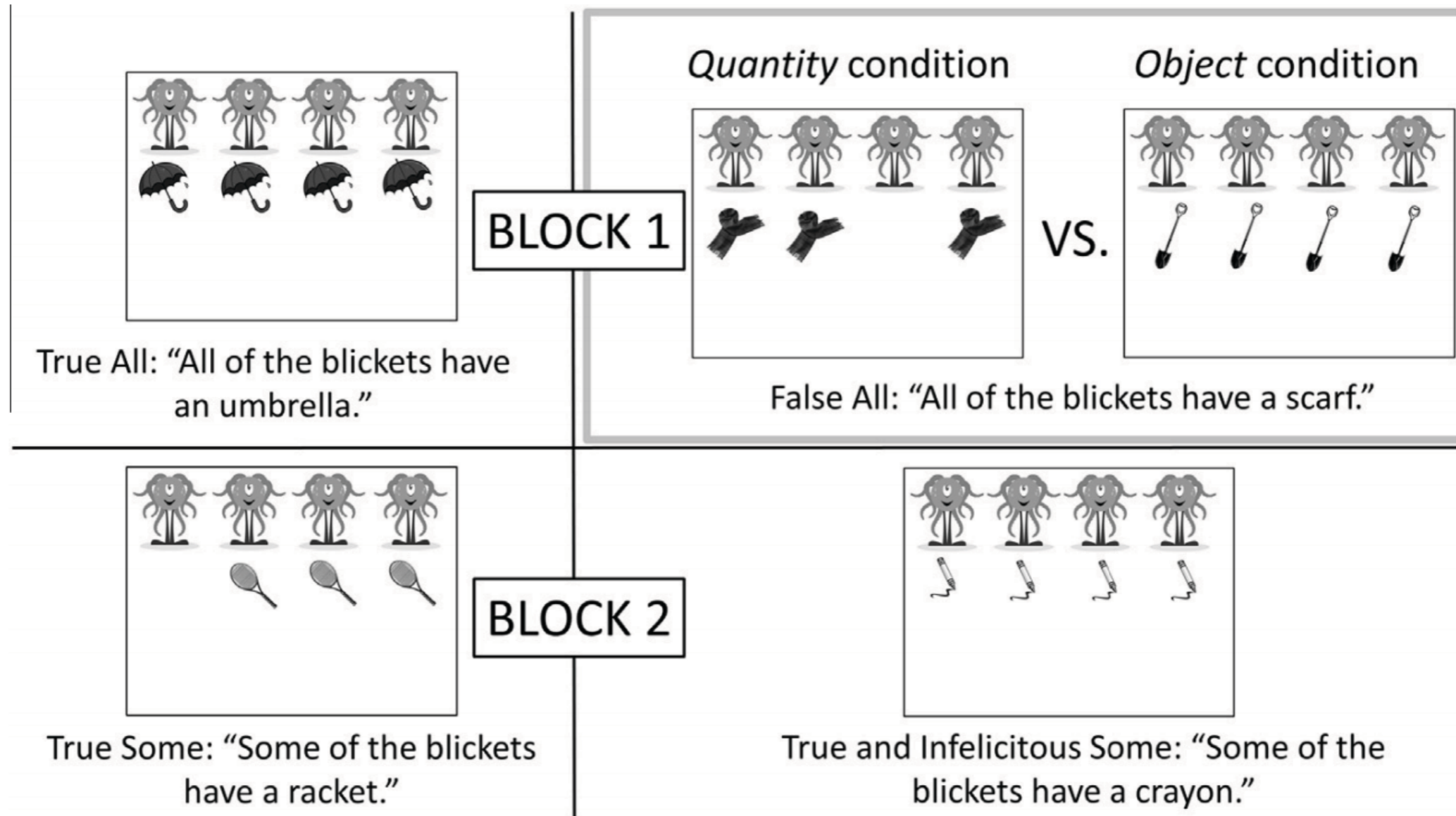
Papafragou & Skordos (2016)

- Goal: test the possibility that it's not alternative-generation *per se* at issue, but reasoning about what alternative is relevant when

Papafragou & Skordos (2016)

Experiment 1 (their Exp2)**:**

- 50 5-yos in an Acceptability Judgment Task

- Critical *some*-trials always preceded by an *all*-trial, which varied wrt what issue was raised as being under discussion

  ‣ Quantity: *do all or less-than-all of the blickets have a racket?*

  ‣ Object: *do all the blickets have a racket or something else?*

Papafragou & Skordos (2016)

Papafragou & Skordos (2016)

Table 4

Some/all-knowers' performance in *True-and-Infelicitous-Some* trials of Experiment 2.

Trial type	Classification	Children Condition	
		Quantity	Object
True-and-Inf-Some	Passers	17	6
	Failers	0	16

* Passer: at least 3/4 trials correct

Papafragou & Skordos (2016)

- **Upshot from Experiment 1:** Accessibility of stronger alternative matters, but only when relevant

Papafragou & Skordos (2016)

Experiment 2 (their Exp3)**:**

- 60 5-yos

- Two between-subjects conditions:

  ‣ **All-first:** same as quantity condition from prev exp

  ‣ **None-first:** *all* statements replaced by *none* variants

Papafragou & Skordos (2016)

- If children have problems with spontaneously generating the stronger lexical scale member, priming with the *all* alternative should help, but priming with *none* shouldn't

  ▸ All-First > None-First

- If children's difficulty lies not in retrieving alternatives, but reasoning about which alternative is relevant, priming of *any* quantity-relevant sentence should encourage SI-computation.

  ▸ All-First = None-First

Papafragou & Skordos (2016)

Table 6

Some/all or *Some/none*-knowers' performance in *True-and-Infelicitous-Some* trials of Experiment 3.

Trial type	Classification	Children Condition	
		All-First	None-First
True-and-Inf-Some	Passers	20	16
	Failers	1	5

Upshot

- Children **fail to compute a scalar implicature** even when the stronger alternative is contextually available, if there is a possibility that it is *irrelevant*

- Children **compute a scalar implicature** even when the stronger alternative has not been made explicit, as long as it has been made *relevant*

Where are they going awry?

S = *Some of the fish are blue*

Step 0: ~~Gricean norms of conversation~~

Step 1: ~~Generate alternatives to S~~

ALT ~~= {All of the fish are blue}~~

Papafragou & Skordos: this piece is all good

Step 2: Reason about speaker's epistemic state

Does speaker consider the *all* variant relevant? Is speaker likely to be opinionated about *all*?

the problem lies here!

Step 3: ~~Negate stronger alternatives, yielding the strengthened meaning:~~

Some of the fish are blue & *not all of the fish are blue*

Next week

- More pragmatics: presupposition

  - read: von Fintel 2008

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