FOCUS ON SCALAR IMPLICATURES
an eye-tracking study

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I’ve had some of those glasses of beer
I’ve had some of these glasses of beer
I’ve had some of these glasses of beer
I’ve had **some of these** glasses of beer
I’ve had some of these glasses of beer

Not all of them! Scalar Implicature
You got **two of the blue gumballs**

A recent story about **some**

Degen & Tanenhaus, 2015; 2016
You got some of the blue gumballs

A recent story about some

Degen & Tanenhaus, 2015 & 2016
The interpretation of *some* depends on (different sources of) contextual constraints
The cost of pragmatic *some* depends on the listeners expectations
(within a certain context)

**Constraint-based account**

Degen & Tanenhaus, 2015 & 2016
GCIs, like SIs, are computed “recursively and compositionally, on a par with ordinary meaning computation (and therefore are not part of a postgrammatical process)”

vs.

Neo-Gricean approaches (a.o. Geurts, 2009)
Relevance Theory (a.o. Sperber & Wilson, 1986)
Literal-First Models (Huang & Snedeker, 2009)

A story of some and all
assume that each scalar item comes in two variants

\textit{some}_{[\pm \sigma]}

\textit{some}_{[+ \sigma]} \rightarrow \textit{the scalar alternatives} to \textit{some} are active and must lead to enrichment

\textit{some}_{[- \sigma]} \rightarrow \textit{the scalar alternatives} are not active and thus cannot lead to pragmatic enrichment.
Prediction:
scalar inferences might get suspended, i.e. not generated, in certain contexts, by choosing the feature setting of the scalar item that fits the context best.

The Grammatical Approach
Methods
Participants

30 Italian speaking adults

Procedure

3 experimental sessions
(25 minutes each -2 weeks apart)
each session:
138 exp. trials + practice

Methods
Visual World Paradigm

you will see «small worlds» populated by abstract objects **doing things** and you will hear a sentence referred to that world

Looking while listening Task

you have to move your eyes to the portion of the screen that matches the sentence that you hear, as soon as you can

Methods

Our Experimental study
visual scenario

4 quadrants
tot. of 16 objects of the same category
(shapes, digits or letters)
+ emoticons for predicates

(Foppolo, Marelli, Meroni & Gualmini, 2015)

each quadrant

4 objects of the same type
(e.g. four squares/four 9s/four As) varying between none-some-all doing the same thing

Materials
each trial

pair of sentences in a sequence
(associated with two different scenarios in which the same objects were doing things but in a different arrangement)

A -TOPIC: intro + Quantifier + Noun + predicate
B -FOCUS: intro + predicate + Quantifier + Noun

Materials
Here some of the circles are drinking a beer.
Now some of the pentagons are drinking a beer
Hypotheses

\(\text{some}^{[+ \sigma]} \rightarrow + \text{ALT} \rightarrow \text{some but not all}\)

\(\text{some}^{[-\sigma]} \rightarrow - \text{ALT} \rightarrow \text{some or all}\)
Here some of the pentagons are drinking a beer.
Here NONE OF the pentagons are drinking a beer

Adesso invece, bevono una birra alcuni dei triangoli

Scalar Alternatives
**Point of Disambiguation**

Some of the pentagons are drinking a beer.

Some of the circles are writing.
some of the pentagons are drinking a beer

some of the circles are writing

Early vs. Late PoD
some of the pentagons are drinking a beer

some of the circles are writing

Early vs. Late PoD
Early vs. Late PoD

Some but not all the pentagons are drinking a beer. Some of the circles are writing.
all the pentagons are drinking a beer

all the Es are dressed like a devil

Some vs. All
<table>
<thead>
<tr>
<th>Session</th>
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<th>FOCUS</th>
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**Conditions**
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- Early
- Late
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\[ \text{some}^{[+ \sigma]} \Rightarrow + \text{ALT} \Rightarrow \text{only some} \]

\[ \text{some}^{[- \sigma]} \Rightarrow - \text{ALT} \Rightarrow \text{some or all} \]

TOPIC $\ll$ FOCUS

NONE $\ll$ ALL

Predictions
SOME-early
SOME-late
ALL-early
Results for the **LOGIT mixed models** on the **Quantifier region**. Dependent variable: proportion of fixations to the TARGET with respect to the whole scenario. **SOME-early**=reference level

|                | Estimate | Std. Error | z value | Pr(>|z|) |
|----------------|----------|------------|---------|----------|
| (Intercept)    | -0.47901 | 0.09564    | -5.009  | p<.0001  |
| All-Early      | 0.23503  | 0.05280    | 4.451   | p<.0001  |
| **Some-Late**  | -0.08531 | 0.08072    | -1.057  | .291     |

|                | Estimate | Std. Error | z value | Pr(>|z|) |
|----------------|----------|------------|---------|----------|
| (Intercept)    | 0.12541  | 0.10726    | 1.169   | .242     |
| All-Early      | 0.25304  | 0.04638    | 5.456   | p<.0001  |
| **Some-Late**  | -0.65597 | 0.07379    | -8.890  | p<.0001  |
Results for the **LOGIT mixed models** on the **Quantifier+Noun region**. Dependent variable: proportion of fixations to the TARGET with respect to the whole scenario. 

| Model          | Estimate | Std. Error | z value | Pr(>|z|) |
|----------------|----------|------------|---------|----------|
| (Intercept)    | -0.02244 | 0.08981    | -0.250  | 0.8027   |
| All-Early      | 0.16676  | 0.06522    | 2.557   | 0.0106   |
| Some-Late      | -0.10366 | 0.07429    | -1.395  | 0.1629   |

| Model          | Estimate | Std. Error | z value | Pr(>|z|) |
|----------------|----------|------------|---------|----------|
| (Intercept)    | 0.63963  | 0.09234    | 6.927   | p<.0001  |
| All-Early      | 0.41308  | 0.06234    | 6.626   | p<.0001  |
| Some-Late      | -0.37934 | 0.07044    | -5.385  | p<.0001  |

**SOME-early**=reference level
Results for the **LOGIT mixed models** on the **Quantifier region** on SOME and ALL depending on preceding context. Dependent variable: proportion of fixations to the TARGET with respect to the whole scenario.

| SOME after   | Estimate | Std. Error | z value | Pr(>|z|) |
|--------------|----------|------------|---------|----------|
| All vs. None | -0.23902 | 0.07255    | -3.295  | 0.000985 |

| ALL after    | Estimate | Std. Error | z value | Pr(>|z|) |
|--------------|----------|------------|---------|----------|
| Some vs. None| -0.5702  | 0.1112     | -5.127  | p<.00001 |

**Alternatives**
The interpretation of some depends on (different sources of) contextual and linguistic constraints. We showed that the availability of scalar alternatives matters in the rate/speed with which pragmatic inferences are derived in discourse.

**Conclusions**
...yet, SOME seems to lag behind ALL even though in all our measures
...yet, the problem here seems to be one about ALL, not about SOME-but-not-all!

ALL starts with a (perceptual?) advantage

A puzzle for the future
Thank you!