

The role of individual differences in the context-dependent interpretation of *some*

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30th Annual CUNY Conference on Human Sentence Processing

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INTERPRETING *SOME* IN CONTEXT

The quantifier *some* is often interpreted with a *not all* implicature:

Speaker A: "Did you find all the books?"

Speaker B: "I found some books."

(upper-bound reading: *some but not all* of the books)

However, the *not all* implicature does not arise in contexts where it is irrelevant whether *all* applies (Roberts, 2004; Zondervan et al., 2008):

Speaker A: "Did you find any books?"

Speaker B: "I found some books."

(lower-bound reading: *some and possibly all* of the books)

Most studies have focused on *some* in isolation by testing whether participants generate an implicature for underinformative sentences like *Some turtles have shells*, thus treating them as infelicitous.

In contrast, relatively few studies have looked at *some* in context to test whether participants interpret *some* either with or without the implicature depending on the demands of the context (e.g. Degen & Goodman, 2014, *paragraph-length picture-sentence verification*; Politzer-Ahles & Fiorentino, 2013, *self-paced reading*).

Current study: We directly test to what extent the interpretation of *some* is conditioned by context in brief story vignettes using story-sentence matching.

INDIVIDUAL DIFFERENCES IN INTERPRETING *SOME*

Previous research has revealed robust individual differences in whether *some* is interpreted with the *not all* implicature in underinformative sentences (e.g. Hunt et al., 2013; Noveck & Posada, 2003).

However, it remains unknown to what extent individuals vary regarding the ability to interpret *some* either with or without the implicature as called for by the demands of the broader context, and which skills may be crucial for generating a context-dependent interpretation of *some*.

Current study: Ours is the first study to our knowledge to test for the presence and possible origins of individual differences in the context-dependent interpretation of *some*. We examine individual variation in:

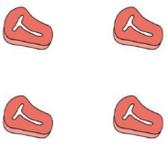
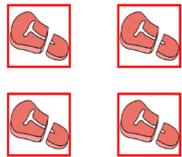
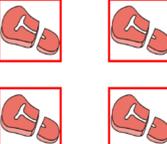
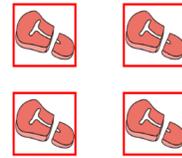
- **Processing skills:** Sufficient processing skills (e.g., working memory capacity) may be required to generate implicatures (Dieussaert et al., 2011; Marty & Chemla, 2013; cf. Antoniou et al., 2016), and to interpret *some* in context, which requires one to encode and maintain information from throughout the story to interpret *some*.
- **Sensitivity to context:** We assess individuals on a domain-general measure of context sensitivity for the first time, as the ability to detect and utilize contextual cues is crucial to generating a context-dependent interpretation of *some*.
- **Pragmatic abilities:** Whether or not an individual interprets *some* with the implicature has been argued to be linked to an individual's socio-cognitive skills (Nieuwland et al., 2010).
- **Language skills:** Those with better language skills may be better able to select among the two ambiguous meanings of *some* in context, and language skills are known to influence sentence comprehension success (e.g. Boudewyn et al., 2012; Van Dyke et al., 2014). We investigate whether individual differences in language skills impact the interpretation of *some* in context for unimpaired adults for the first time, to our knowledge (Katsos et al., 2011; Pijnacker et al., 2009).
- **Attentional control:** Although not often tested in this literature (cf. Antoniou et al., 2016), sufficient attentional control may be required to suppress one interpretation of *some* and pursue the other interpretation depending on the context.

STIMULI & TASK

Task: Story-sentence matching task, using a short story setting

Context manipulation:

- Upper- or lower-bound context set up by having "all" or "any" in the question preceding the character's response with *some*
- 32 targets (16 in each condition) split into 2 Latin-square lists were presented using Paradigm software (Tagliaferri, 2005)
- 32 fillers were tested in the same context manipulations, but were made patently true or false by using "only some" rather than "some" in the response

| | |
|--|---|
|  <p>1</p> |  <p>2</p> |
| John and his coworker were working in a restaurant to develop new steak recipes. Here are the steaks they were going to use. | In the end, the steaks looked like this. |
|  <p>3</p> |  <p>4</p> |
| John's coworker asked him, "Have you cut all the/any steaks?" John quickly replied, "I cut some steaks." | John's coworker asked him, "Have you cut all the/any steaks?" John quickly replied, "I cut some steaks." How well did John's response match with what happened in the story? 1 2 3 4 5 6 7 |

Prediction: Effect of context

If participants are indeed sensitive to context, then the mean ratings in the upper-bound context should be lower than in the lower-bound context.

INDIVIDUAL DIFFERENCE MEASURES

Processing skills/Sensitivity to context (composite score based on correlation; $r=0.44$)

- Working memory: Counting Span task (Conway et al., 2005)
- Sensitivity to context: Dot Pattern Expectancy (Cohen et al., 1999)

Pragmatic abilities

- Autism-Spectrum Quotient (Baron-Cohen et al., 2001)

Language skills (composite score based on correlation; $r=0.42$)

- Peabody Picture Vocabulary Test, 4th edition (Dunn & Dunn, 2007)
- Author and Magazine Recognition Tasks (Acheson et al., 2008)

Attentional control

- Number Stroop task (Bush & Shin, 2006)

PARTICIPANTS & ANALYSES

Participants:

N=23 native speakers of English (6 males, mean age=19.1), data collection ongoing

Analysis:

Linear Mixed Effects Modeling (ID measures included in separate models)

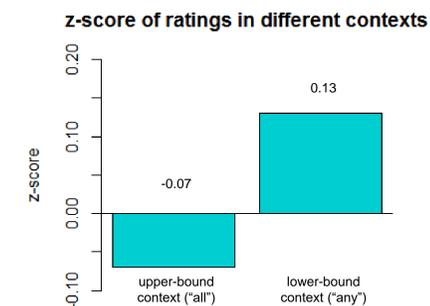
- Dependent variable: Rating (z-transformed)
- Fixed effects: *Context*, *Processing skills*, *Pragmatic abilities*, *Language skills*, *Attentional control*
- Random effect: Participant, random intercept

PRELIMINARY RESULTS (N=23)

Effect of context on the interpretation of *some*

Mean ratings in the upper-bound context (with "all") are lower than in the lower-bound context (with "any") ($t(1,713)=6.039$, $p<0.001$)

No effect of Context was found among fillers ($t(1,736)=0.542$, $p=0.588$)



Context sensitivity modulated by individual differences

Individual differences significantly interact with the Context effect:

Processing skills/sensitivity to context:

- Participants with higher processing skills made a bigger distinction between the two contexts ($t(713)=4.638$, $p<0.05$)

Pragmatic abilities:

- Participants with higher pragmatic abilities made a bigger distinction between the two contexts ($t(713)=-2.734$, $p<0.05$)

Language skills:

- Participants with higher language skills made a smaller distinction between the two contexts ($t(713)=-2.544$, $p<0.05$)

Attentional control:

- Participants with higher attentional control made a smaller distinction between the two contexts ($t(713)=-2.787$, $p<0.05$)

DISCUSSION

Our results suggest that the interpretation of *some* in context is indeed subject to robust individual differences. Our findings suggest that individual differences may impact the processing of *some* in context in the following ways:

Detecting and utilizing contextual information may require sufficient processing skills and pragmatic abilities:

- Sufficient processing skills/sensitivity to context may be required to successfully attend to context cues and utilize contextual information in generating an interpretation for *some*
- Higher pragmatic abilities may be necessary to take context into consideration when interpreting *some*

Canceling the implicature in the upper-bound context to yield an interpretation that matches the story may require sufficient language skills and attentional control:

- Those with higher language skills may be better able to cancel the *not all* implicature in order to arrive at a "match" interpretation of *some* in the upper-bound ("all") context (Barbet & Thierry, 2016)
- Flexibly switching between the two interpretations of *some* (with vs. without the implicature) may require sufficient attentional control

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- Acknowledgments**
We are grateful to Dr. Alison Gabriele for suggestions on task design, and to Jonah Bates, Dr. Kate Coughlin, JP Doherty, Dr. Andrew McKenzie, Dr. Annie Tremblay, and Dr. Jie Zhang for helping with participant recruitment, and our research assistant Vann Hassell for helping with data collection. We also want to thank the LING851 audience for constructive feedback and discussions on the project.