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# Retrieval of implicit contents

## An experimental study with children and adults

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### Background

From what is said (explicit meaning) to what is meant (implicit meaning)

The retrieval of implicit contents is crucial to fully understand a discourse, in particular for decoding Speaker communicative intention and for grasping the discourse coherence.

Types of implicit contents:

- **Presuppositions:** triggered by lexical items – require only lexical competences – implicit content added to explicit one
- **Generalized conversational implicatures:** non logical (defeasible) inferences stemming from conversational rules (Grice 1975) – require, in addition to lexical knowledge, a reasoning about Speaker cooperativity – implicit content added to explicit one
- **Irony:** based on a contextual reasoning that preserves discourse coherence – implicit content replacing explicit one

These three types of implicit contents are already cognitively accessible to children from the age of 5 in favorable contexts (Domaneschi et al. 2022; Eiteljoerge et al. 2018; Angeleri et al. 2014).

### Research Question & Hypotheses

Which linguistic units (word, phrase, sentence, discourse) are necessary and/or sufficient to retrieve implicit contents?

#### Hypotheses

- Cues to understand **presuppositions** should be very local (lexical or syntactic triggers in the target sentence), no need to refer to preceding context.
- Cues to understand **irony** should be found both in the ironic sentence and in the preceding context, and consists in large parts of the text; irony is context-sensitive.
- Cues to understand **implicatures** should be found both in the sentence (as for presuppositions) and in the context (but to a lesser extent than for irony).

### Experiment

#### Participants, design and materials

- 105 children (aged 6 to 11) + 82 adults (34 y.o)
- Manipulated variable: type of implicitness (presupposition – conversational implicature – irony)
- 12 short texts composed of a context and a target sentence conveying one implicit content + 16 fillers with the same structure
- For the adults: half the participants saw the text during question answering, while the text disappeared during question answering for the other half.

#### Procedure

1. Participants read the text and answered a comprehension yes-no question to check whether they had inferred the implicit content (Fig. 1)
2. They indicated the segments from the text that helped them answer the question (Fig. 2)

### Item illustration

Conditions	Context	Target Sentence	Question
Presupposition	Tom n'aime pas aller à l'école. Il a beaucoup de mauvaises notes. Ce week-end, ses parents doivent signer ses cahiers.	Ils sont contents parce que Tom continue à faire des progrès en calcul. 'They are pleased because Tom continues to make progress in arithmetic.'	Est-ce que c'est la première fois que Tom fait des progrès en mathématiques? 'Is this the first time Tom has made progress in math?'
Implicature	'Tom doesn't like going to school. He gets a lot of bad grades. This weekend, his parents have to sign his exercise books.'	Ils sont contents parce qu'il a réussi deux exercices. 'They are pleased because he managed to do two exercises.'	À votre avis, est-ce que Tom a raté tous les autres exercices? 'In your opinion, did Tom fail to do the other exercises?'
Irony		Son père lui dit : "Alors, toujours le meilleur de la classe ?" 'His father said to him: "So, still top of the class?"'	À votre avis, est-ce que le père de Tom pense que son fils est le meilleur de la classe? 'In your opinion, does Tom's father think his son is top of the class?'

Fig. 1: Example of an experimental item under the three conditions

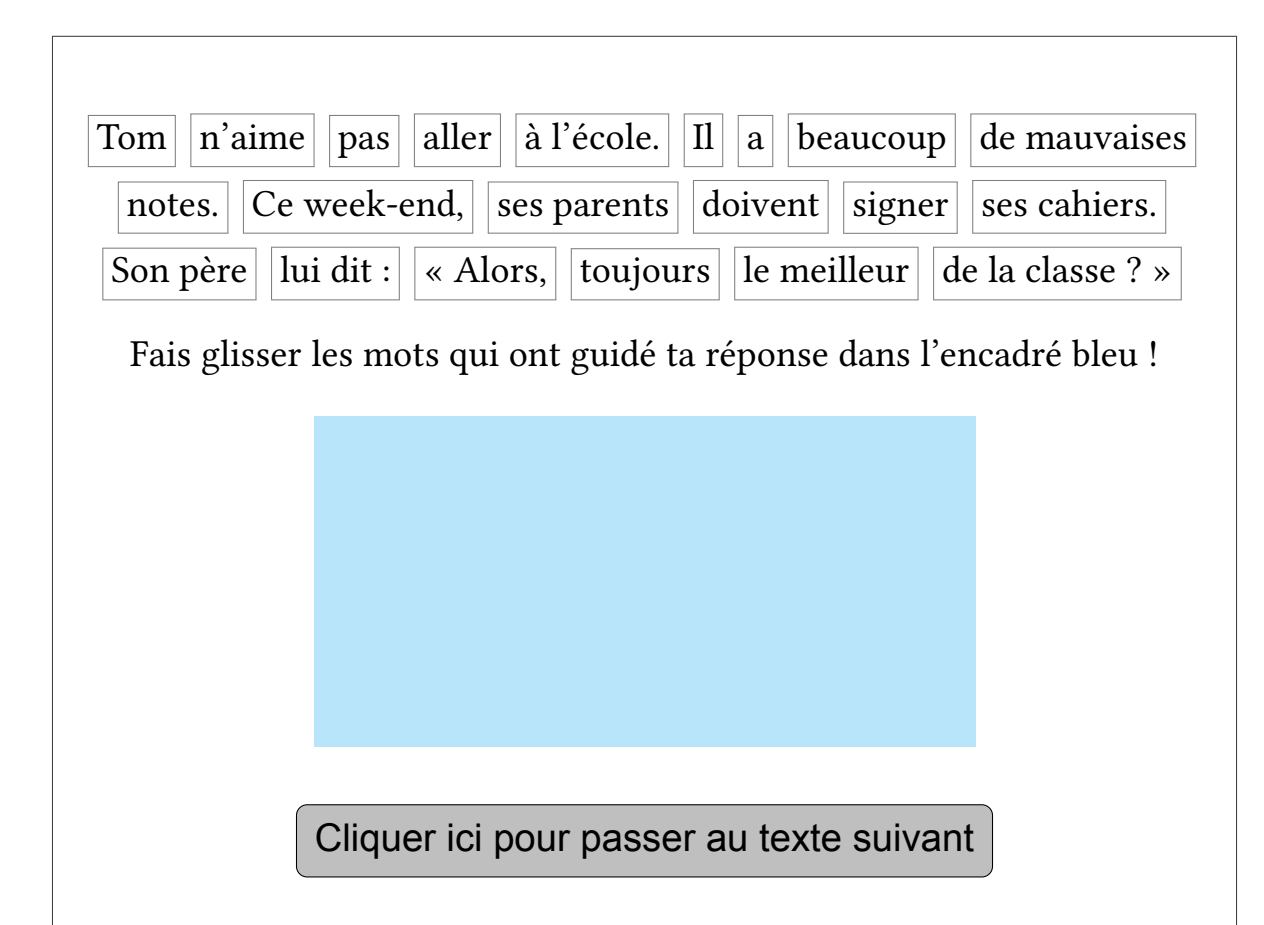


Fig. 2: Example of how the word segments were presented

### Results

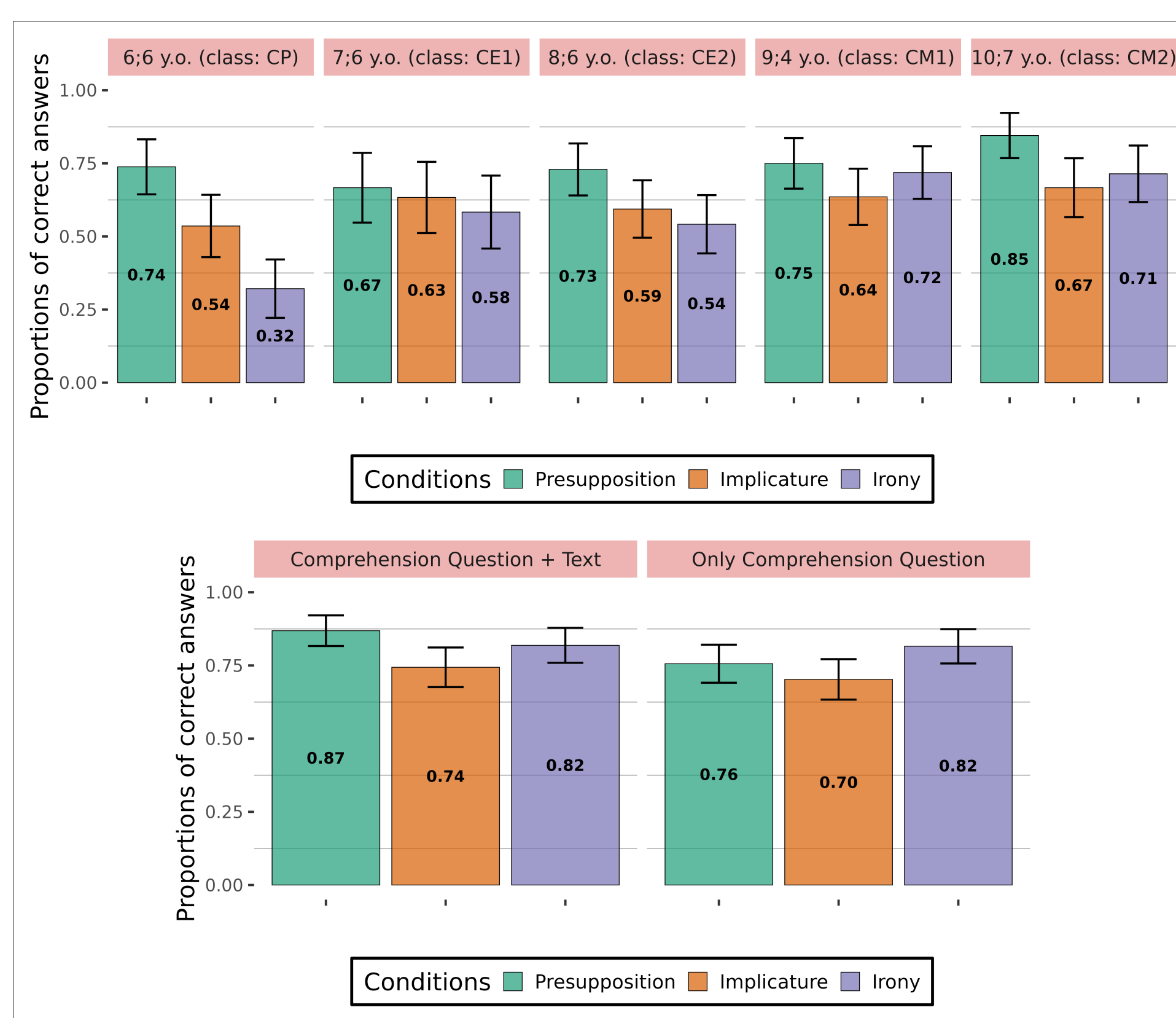


Fig. 3: Proportions of correct answers for children (top) and adults (bottom)

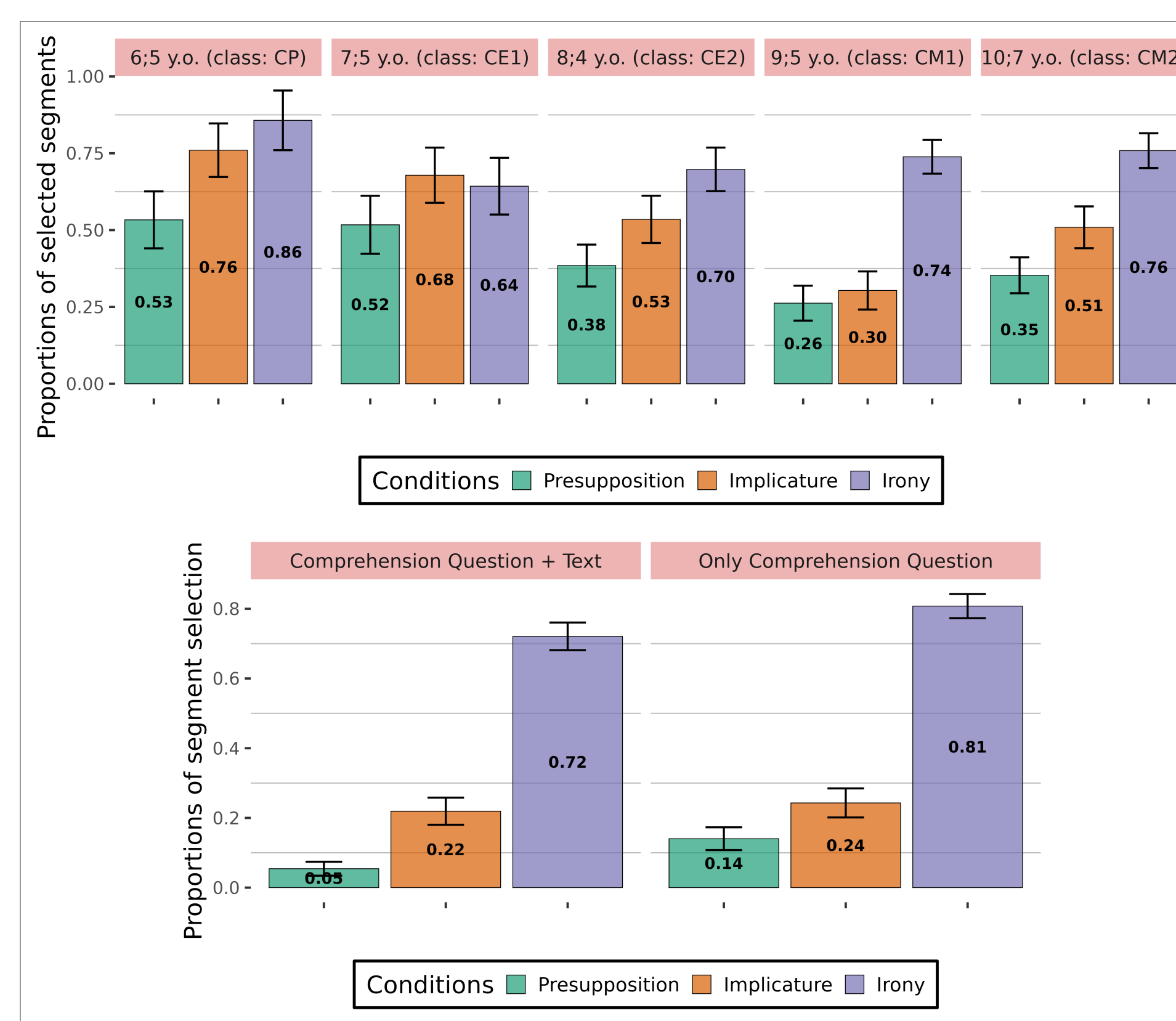


Fig. 4: Proportions of segment selection for children (top) and adults (bottom)

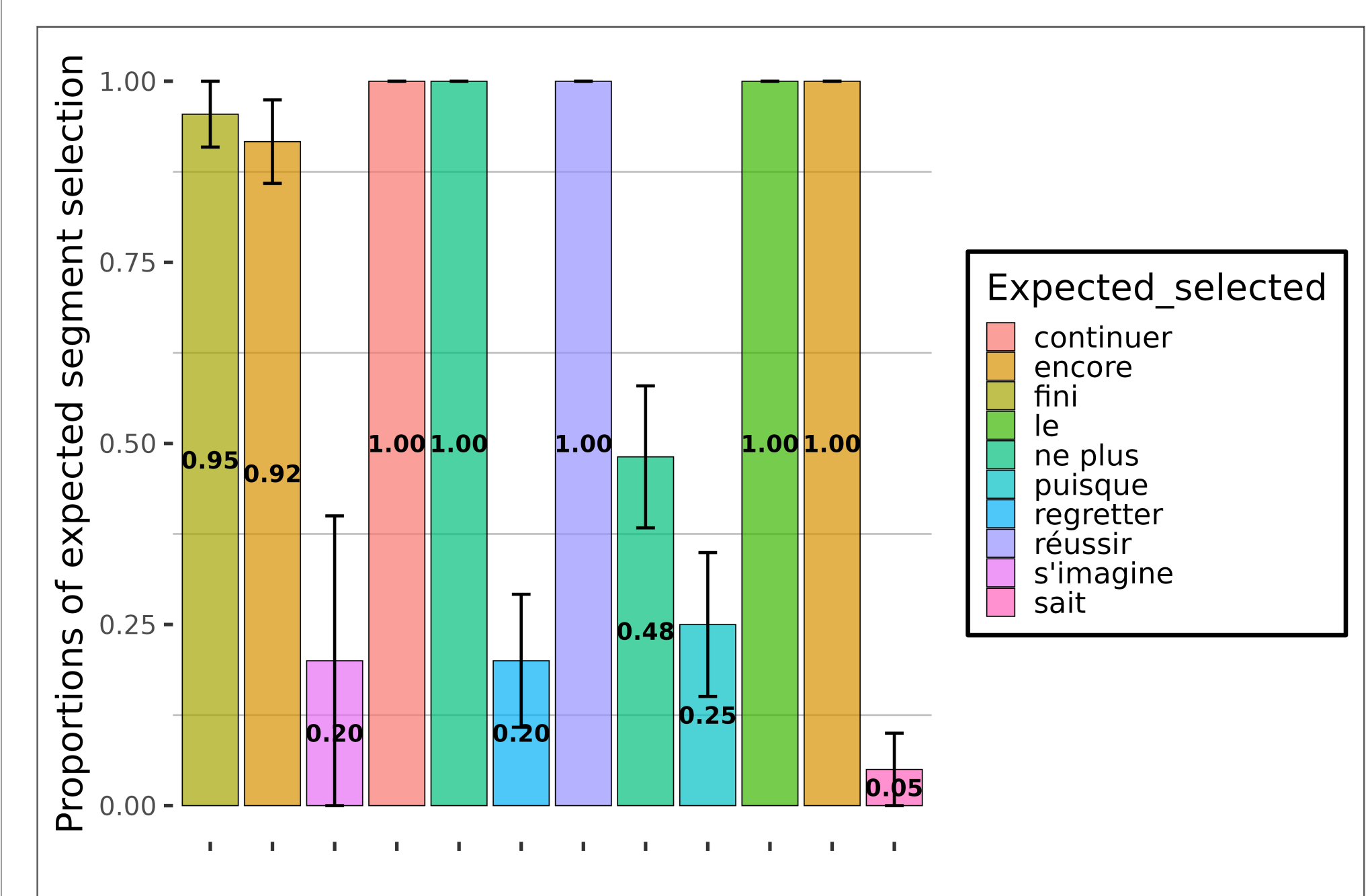


Fig. 5: Proportions of expected segment selection in context depending on types of presupposition for adults

- For children across all class levels (figure 3): presupposition is better understood than implicature, and implicature better understood than irony (0.58 for irony, 0.61 for implicature, 0.75 for presupposition). In higher classes, accuracy becomes better for irony, but not for implicature (compared to presupposition).
- For adults (figure 4): presupposition and irony are better understood than implicature. Also, presuppositions are better understood when the text is displayed than when it is not.

- Both adults and children selected segments more often for irony and for implicature compared to presupposition (figure 4).
- Figure 5: bipartition of items: items recognized as presupposition triggers (proportions close to 1) vs items not recognized as such (proportions below 0.5, which can reach 0.05).

### Conclusion

- Presupposition is detected at a sub-sentential level, while implicatures and irony require extra-sentential materials (i.e. the context).
- Adults understand presuppositions better if the text is displayed during question answering. Possible explanation: presuppositions are not at-issue.
- Implicatures are the most difficult to compute. Possible explanation: implicatures are inherently defeasible, hence often perceived as uncertain.
- Wide variation in the recognition of presupposition triggers. A mismatch between linguistic definition and linguistic processing.

### References

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