Redundant Scalar Implicatures and the Ontology of Enriched Meaning

Introduction

Suppose a listener hears 'Some of the students passed the exam' in a context where everyone already knows that not all of them passed. Should the mind still construct the enriched proposition 'some but not all' as a distinct meaning, even though it is already part of the shared knowledge? The example above where the enriched meaning is already in the common ground highlights an ontological–interface issue about the nature of scalar implicatures (SI): the term can refer either to the process of pragmatic reasoning or to the product, the enriched proposition itself, what Grice called the implicatum. In the common ground example, the product is effectively null because the enriched meaning is already part of the shared knowledge, yet the central question is whether the enrichment process can still be discerned to take place. This issue concerns whether, at the semantics–pragmatics interface, the enriched proposition should be represented as a distinct ontological object, even when it is already part of the common ground. SIs have been the focus of a long-standing debate over whether they are 'default' or 'contextual'. Defaultism covers both the possibility that SIs are automatic enrichments of lexical meaning (Levinson 2000) and that they are achieved by the activation of a grammatical exhaustivity operator (Landman 2000 Chierchia 2004).

In the experimental literature, contextualism has predominantly been identified with a Relevance Theoretic (RT) approach (Sperber and Wilson 1995) in which SIs arise only if they are germane to the needs of the current discourse context (Noveck 2001, Geurts 2009). Our work focuses on an understudied prediction which potentially distinguishes default from RT accounts. As noted by Magri (2009), default accounts predict that SIs arise even when their content is informationally redundant. Using a priming paradigm, we explore whether scalar implicatures are actively computed even when 'not all' is shared knowledge or whether the implicature is simply part of the interpreted meaning without requiring computation. In ontological terms, this involves probing the 'building blocks' of meaning here, scalar propositions and their alternatives and testing whether these are obligatorily instantiated in interpretation regardless of communicative utility. The study has implications for understanding the process of implicature computation and for understanding implicature sentences in thought. The relevance to thought lies in the proposed shared knowledge manipulation, which allows us to test whether internal self-talk involves the process of implicature computation, or whether implicature-consistent interpretations in thought can arise without such processing. The findings will contribute to open questions in semantics and pragmatics, specifically, the processing patterns and interpretive mechanisms of scalar implicatures.

Background & Motivation:

While it is tempting to dismiss implicatures in thought as redundant beliefs, I argue that sentences in thought often mirror conversational sentences, including implicatures. For example, John, reflecting on Mary's illness, speculates about the possible presence of spoiled food and says to himself, "Wait! I ate some of that meat too"; such an utterance could imply he ate some but not all of the meat." A question arises as to whether implicature processing occurs even when the person themselves already knows the implicated meaning. This inquiry also extends to whether implicature computation persists when the stronger alternative is shared knowledge. Thus, understanding implicature in thought has repercussions for:

(a) Implicature computation: How implicatures are derived;
(b) Decision-making: How implicature influences subsequent cognitive processes.

SIs involve reasoning about alternatives on a scale (Horn 1972):

(1) Bart*: Do you need to leave, John?* John*: "Some students are waiting for me." => Not all students are waiting for me.*

Hearers derive implicatures by considering the stronger alternative "all" that the speaker could have used but did not, inferring it to be *false*. However, consider:

(2) *Some mammals lay eggs.* [this is a true statement because Monotremes lay eggs]

Here, "not all mammals lay eggs" is common knowledge. This raises the question: Does implicature computation still occur, or does shared knowledge render it unnecessary? Here the theoretical accounts differ: **RT** suggests scalar implicatures are context-dependent, and will not be initiated when ‘not-all’ is already known; **Defaultists** propose them as default semantic inferences (Chierchia 2004). The current study seeks to test the competing predictions of these two theoretical accounts and to also inform debates on the language of thought.

Methods

In the paradigm used here, we employ a mouse-tracking method following Dale et al. (2007) and Spivey et al. (2005) to measure the time-course by which the ‘not all’ meaning is derived. Participants see prime-target pairs, with the prime trial varying across 1-3 below and the target trial always containing the same candidate implicature, whose interpretation decision and speed we analyse. In each trial, they view a visual sample of eggs and hear a description of the carton the sample was taken from (e.g., "some of the eggs are white"). Target trials consistently allow a some-but-not-all implicature (e.g., "some of the eggs are white" when the sample is two white eggs). The experiment tests whether implicature processing in preceding prime trials facilitates implicature generation in target trials:

1. **No Implicature Prime**: "All of the eggs are brown," with a sample of brown eggs. Prediction: No facilitation at the target trial.
2. **Standard Implicature Prime**: "Some of the eggs are brown," with a sample of brown eggs. Prediction: Facilitation at the target trial.
3. **Common Ground Prime**: "Some of the eggs are white," with a sample of brown eggs. Prediction: Gricean theory predicts no facilitation, while defaultists theorists predict facilitation due to implicature activation.

Results:

Experiment 1 tested the basic effect. Mouse trajectories were compared to an ideal path from the screen centre to the target showing mixed white and brown eggs, time-normalised to 101 steps, and analysed using GAMM. In this experiment, implicature present and common ground conditions showed significantly reduced perpendicular deflection from the ideal path ($p < .001$) compared to the implicature absent condition, indicating earlier, more direct movements toward the implicature-consistent target. No significant differences emerged between implicature present and common ground conditions.

Experiment 2 avoided identical prime–target audio in the common ground condition. Experiment 3 made the prime trials lead to the same response choice as the target trials in all conditions, ensuring that any effects could not be explained by simple repetition of a previous motor response. These two follow-up experiments confirmed the findings of Experiment 1 while avoiding the potential confounds of identical audio and repeated motor responses.

Conclusion

Across three experiments, implicature present and common ground conditions showed significantly reduced deflection from the ideal path compared to implicature absent, with no difference between them. This indicates that the interpretive system constructs the implicature ‘not all’ even when it is already common knowledge. From an ontological–interface perspective, the results suggest that the listener uses pragmatic reasoning to generate scalar implicatures as distinct interpretive objects, rather than bypassing enrichment when no new information is added. This supports defaultist accounts, which predict such obligatory construction, and challenges RT predictions that implicature generation depends on contextual relevance. Broadly, the findings speak to how the mental ontology of meaning is maintained during comprehension, with potential implications for understanding the status of implicatures in the language of thought.